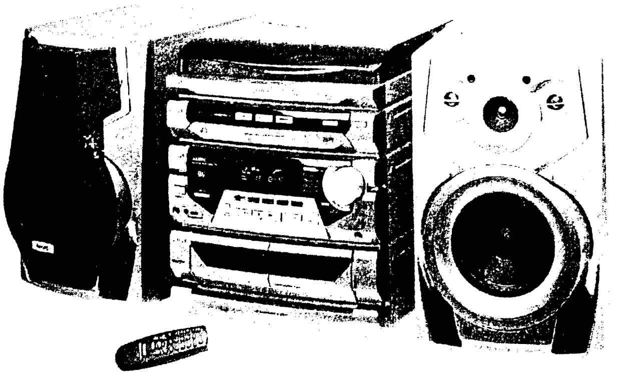
Midi System **AS680C/21/22/30/34**

Service
Service
Service



Service Manual

COMPACT
disc
DIGITAL AUDIO

TABLE OF CONTENTS

Page
Location of pc boards & Version variations 1-2
Technical Specifications 1-3
Measurement setup 1-4
Service Aids, Safety Instruction, etc. 1-5
Instruction for use : Oversea version excerpt 2-1
Additional Feature 2-10
Disassembly Instructions & Service positions 3-1
Service Test Programs 3-3
Set Block diagram 4
Set Wiring diagram 5
Front Board 6
Tuner Board: ECO5 Sys 7B
Tuner 95 .... 7D
ETF6 ND Tape Module 9
3CDC Module 10
Power 2VA Module 11
AF5 Board 12
Phono/Aux Board 14B
Record Player DL-40 15
Set Mechanical Exploded view & parts list 16

CLASS 1
LASER PRODUCT

© Copyright 1998 Philips Consumer Electronics B.V. Eindhoven, The Netherlands
All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise without the prior permission of Philips.

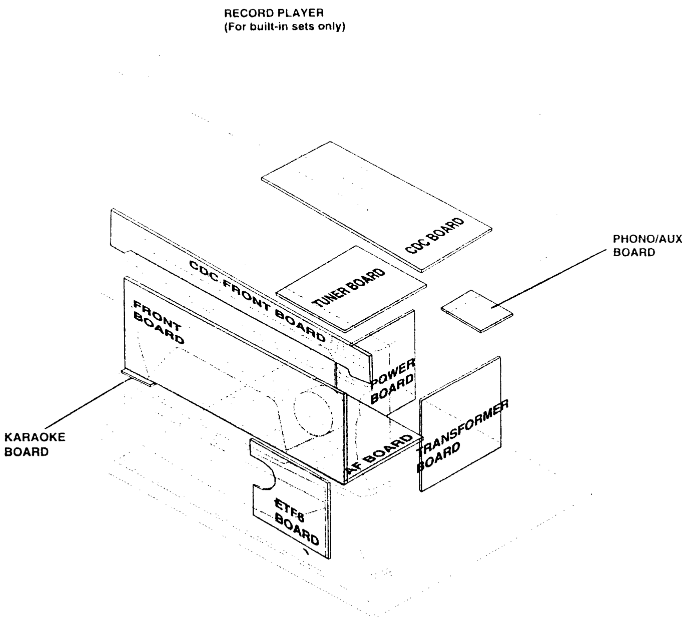
Published by KC 9850 Service Audio Printed in The Netherlands Subject to modification

GB 4822 725 25832

PCS 100 808

PHILIPS

LOCATION OF PRINTED CIRCUIT BOARDS



VERSION VARIATIONS:

Type /Versions:	AS680C							
Features & Board in used:	/21	/22	/30	/34				
Aux Input	x	x	x	x				
Line Output								
Surround Output								
Subwoofer Output								
Digital Optical Out								
Matrix Surround Connection								
Dolby B								
RDS		x		x				
News								
Incredible Surround	x	x	x	x				
Karaoke Features	x		x					
Voltage Selector	x							
Tuner board - ECO5 Sys	x		x	x				
Tuner board - Tuner 95		x						
Surround Loudspeakers								

SPECIFICATIONS

GENERAL:

Mains voltage : 100V for /26
110-127V/220-240V Switchable for /21/21M
120V for /37
220V for /33
220-230V for /22/34
230V for /25
230-240V for /30
Mains frequency : 50/60Hz
Power consumption : < 12W at clock mode FTD on
< 50W at 1/8 rated power out
Clock accuracy : < 4 seconds per day
Dimension centre unit : 363 x 422 x 375mm

TUNER:

FM

Tuning range : 87.5-108MHz
65.81-74MHz for /34
Grid : 50kHz (& 30kHz for /34)
IF frequency : 10.7MHz ± 25kHz
Aerial input : 75ohm coaxial
300ohm click fit for /37
Sensitivity at 26dB S/N : < 7μV
Selectivity at 600kHz bandwidth : > 50dB
Image rejection : > 25dB [> 75dB]
Distortion at RF=1mV, dev. 75kHz : < 3% [< 2%]
-3dB Limiting point : < 7μV
Crosstalk at RF=1mV, dev. 40kHz : > 18dB [> 26dB]

MW

Tuning range : 531-1602kHz
530-1700kHz for /21/21M/37
Grid : 9kHz
10kHz for /21/21M/37
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : < 4.0mV/M
Selectivity at 18kHz bandwidth : > 18dB
IF rejection : > 45dB
Image rejection : > 28dB
Distortion at RF=50mV, m=80% : < 5% [< 7%]

LW

Tuning range : 153-279kHz
Grid : 3kHz
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : [< 7.0mV/M]
Selectivity at 18kHz bandwidth : [> 24dB]
IF rejection : [> 26dB]
Image rejection : [> 35dB]
Distortion at RF=50mV, m=80% : [< 7%]

AMPLIFIER:

Output power (1kHz, 10% THD)
L & R : 2 x 25W RMS at 3 ohm

Frequency response within -3dB : 60Hz-16kHz
Dynamic Bass Boost : DBB On, DBB Off [1]
Digital Sound Control : Optimal,Classic,Rock,Techno,Jazz [1]
Incredible Surround : IS ON , IS Off [1]

Headphone output at 32 ohm : 15mW

Input sensitivity
Aux in : 420mV ± 2dB at 600 ohm
Microphone : 2.5mV ± 2dB at 600 ohm

CASSETTE RECORDER:

Number of track : 2 x 2 stereo
Tape speed : 4.76 cm/sec ± 2%
1.6 x 4.76 cm/sec
Wow and flutter : < 0.4% DIN
Fast-wind/Rewind time C60 : 130 sec
Bias system : 75kHz ± 10kHz
Rec/Pb frequency response within 8dB : 80Hz - 12.5kHz
Signal to noise ratio (IEC I) : > 44dB
Signal to noise ratio (IEC II) : > 47dB

COMPACT DISC:

Measurement done at output conn. of the CDC module.
Frequency response within ± 1.5dB : 20Hz - 20kHz
Output level (in Vrms) : 550mV ± 2dB unloaded
Signal/Noise ratio (A-weighted) : > 80dBA
Distortion at 1kHz : < 0.5%
Channel difference at 1kHz : < 1dB
Channel crosstalk at 1kHz : > 45dB
De-emphasis : 0 or 15/50 mS (Switched by subcode on the disc)

RECORD PLAYER:

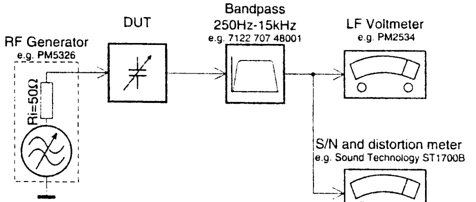
Power Supply : 12Vdc at 80mA
Wow & Flutter : 0.25% JIS
0.35% DIN
Operating Speed : 33 1/3 - 45 rpm
Drive System : Belt drive with auto return

[....] Values indicated are for "Tuner 95 Board" only

[1] Frequency response in each setting is software controlled.

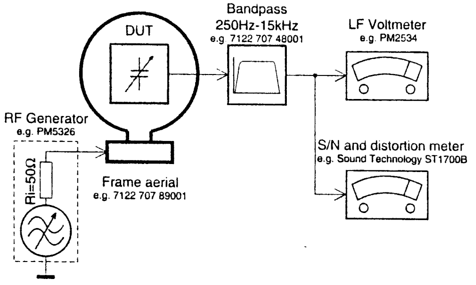
MEASUREMENT SETUP

Tuner FM


DUT
Bandpass
250Hz-15kHz
e.g. 7122 707 48001
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
S/N and distortion meter
e.g. Sound Technology ST1700B

Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

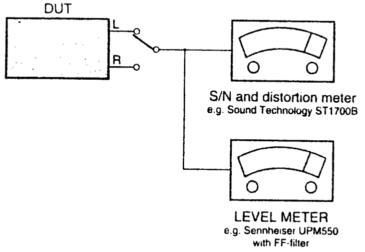
Tuner AM (MW,LW)


DUT
Bandpass
250Hz-15kHz
e.g. 7122 707 48001
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
Frame aerial
e.g. 7122 707 89001
S/N and distortion meter
e.g. Sound Technology ST1700B

To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday's cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

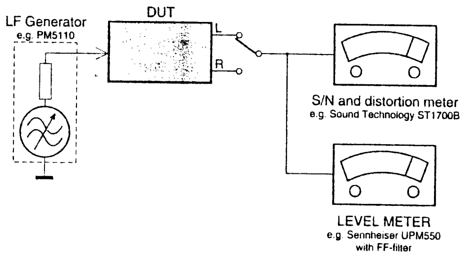
CD

Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)


DUT
L
R
S/N and distortion meter
e.g. Sound Technology ST1700B
LEVEL METER
e.g. Sennheiser UPM550
with FF-filter

Recorder

Use Universal Test Cassette **CrO2** SBC419 4822 397 30069
or Universal Test Cassette **Fe** SBC420 4822 397 30071


LF Generator
e.g. PM5110
DUT
L
R
S/N and distortion meter
e.g. Sound Technology ST1700B
LEVEL METER
e.g. Sennheiser UPM550
with FF-filter

SERVICE AIDS

Service Tools:

Universal Torx driver holder	4822 395 91019
Torx bit T10 150mm	4822 395 50456
Torx driver set T6 - T20	4822 395 50145
Torx driver T10 extended	4822 395 50423

Cassette:

SBC419 Test cassette CrO2	4822 397 30069
SBC420 Test cassette Fe	4822 397 30071
MTT150 Dolby level 200nWb/M	4822 397 30271

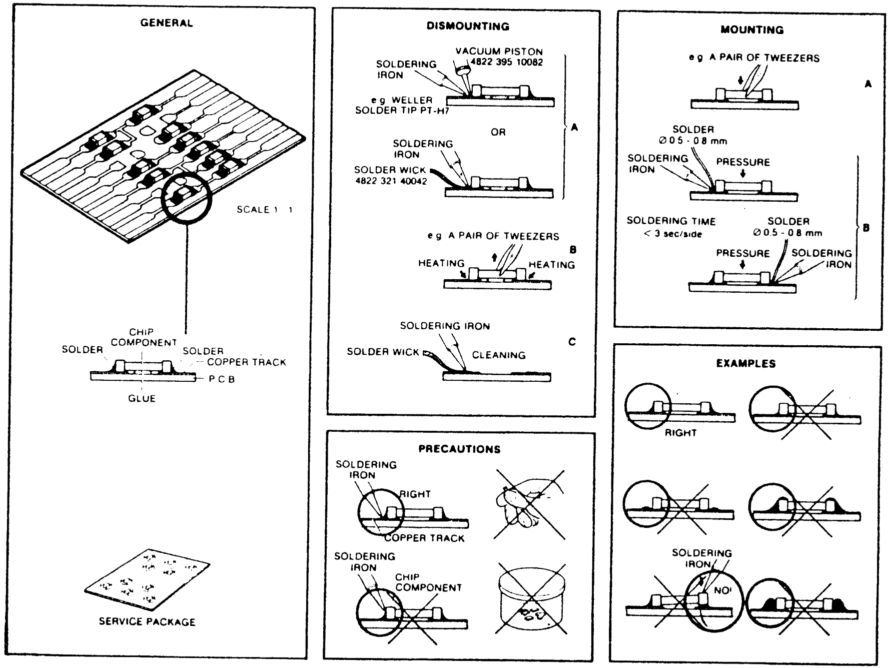
Compact Disc:

SBC426/426A Test disc 5 + 5A	4822 397 30096
SBC442 Audio Burn-in Test disc 1kHz	4822 397 30155
SBC429 Audio Signals disc	4822 397 30184
Dolby Pro-logic Test Disc	4822 395 10216

ESD Equipment:

Anti-static table mat - large 1200x650x1.25mm	4822 466 10953
Anti-static table mat - small 600x650x1.25mm	4822 466 10958
Anti-static wristband	4822 395 10223
Connector box (1MΩ)	4822 320 11307
Extension cable (to connect wristband to conn. box)	4822 320 11305
Connecting cable (to connect table mat to conn. box)	4822 320 11306
Earth cable (to connect product to mat or box)	4822 320 11308
Complete kit ESD3 (combining all above products)	4822 320 10671
Wristband tester	4822 344 13999

HANDLING CHIP COMPONENTS


GENERAL
SCALE 1 : 1
CHIP COMPONENT
SOLDER
SOLDER
COPPER TRACK
P C B
GLUE
SERVICE PACKAGE
DISMOUNTING
VACUUM PISTON
4822 395 10082
SOLDERING IRON
e.g. WELLER SOLDER TIP PT-H7
OR
SOLDERING IRON
SOLDER WICK
4822 321 40042
A
e.g. A PAIR OF TWEEZERS
HEATING
HEATING
B
SOLDERING IRON
SOLDER WICK
CLEANING
C
PRECAUTIONS
SOLDERING IRON
RIGHT
COPPER TRACK
SOLDERING IRON
CHIP COMPONENT
MOUNTING
e.g. A PAIR OF TWEEZERS
A
SOLDER
Ø 0.5 - 0.8 mm
SOLDERING IRON
PRESSURE
SOLDERING TIME
< 3 sec/side
SOLDER
Ø 0.5 - 0.8 mm
PRESSURE
SOLDERING IRON
B
EXAMPLES
RIGHT
SOLDERING IRON
NO!

27 012C12

ESD

(GB) **WARNING**

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD).
Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

(NL) **WAARSCHUWING**

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

(F) **ATTENTION**

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

(D) **WARNUNG**

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

(I) **AVVERTIMENTO**

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

(GB)

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used.

(NL)

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

(F)

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utiliséés les pièces de rechange identiques à celles spécifiées.

(D)

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

(I)

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

"After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA."

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

CLASS 1
LASER PRODUCT
3122 110 03420

(GB) **Warning !**

Invisible laser radiation when open.
Avoid direct exposure to beam.

(S) **Varning !**

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

(SF) **Varoitus !**

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso säteeseen!

(DK) **Advarse !**

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

GENERAL INFORMATION

General Information

- ***The typeplate (which contains the serial number) is located at the rear of the system.***
- ***Recording is permissible if copyright or other rights of third parties are not infringed.***

Environmental Information

All unnecessary packaging material has been omitted. We have done our utmost to make the packaging easily separable into three mono-materials: cardboard (box), polystyrene foam (buffer) and polythene (bags, protective foam sheet).

Your system consists of materials which can be recycled and reused if disassembled by a specialized company. Please observe the local regulations regarding the disposal of packaging materials, exhausted batteries and old equipment.

Accessories (Supplied)

- Remote control
- Batteries (2 x AAA size) for remote control
- AM loop antenna
- FM antenna wire
- AC power cord

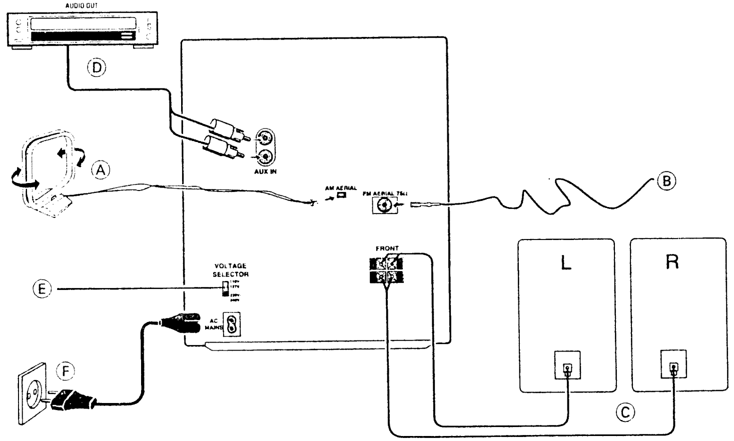
SAFETY INFORMATION

Safety Information

- Before operating the system, check that the operating voltage indicated on the typeplate (or the voltage indication beside the voltage selector) of your system is identical with the voltage of your local power supply. If not, please consult your dealer. The type plate is located at the rear of your system.
- When the system is switched on, do not move it around.
- Place the system on a solid base (e.g. a cabinet).
- Place the system in a location with adequate ventilation to prevent internal heat build-up in your system.
- Do not expose the system to excessive moisture, rain, sand or heat sources.
- Under no circumstances should you repair the system yourself, as this will invalidate the warranty!
- If the system is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lens of the CD unit inside the system. Should this occur, the CD player will not operate normally. Leave the power on for about one hour with no disc in the system until normal playback is possible.
- Electrostatic discharge may cause unexpected problems. See whether these problems disappear if you unplug the AC power cord and plug it in again after a few seconds.
- **To disconnect the system from the power supply completely, remove the AC power plug from the wall socket.**

PREPARATION

Rear Connections



A AM Antenna Connection

Connect the supplied loop antenna to the AM AERIAL terminal. Place the AM loop antenna far away from the system and adjust its position for the best reception.

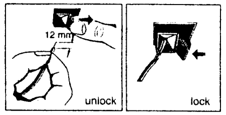
B FM Wire Antenna Connection

Connect the supplied FM wire antenna to the FM 75 Ω terminal. Adjust the position of the FM antenna for the best reception.

Outdoor Antenna
For better FM stereo reception connect an outdoor FM antenna to the FM AERIAL 75 Ω terminal using a 75 Ω coaxial wire.

C Speaker Connections

- Connect the right speaker to Front terminal R, with the red wire to + and the black wire to –.
- Connect the left speaker to Front terminal L, with the red wire to + and the black wire to –.
- Clip the stripped portion of the speaker wire as shown



D Connecting other equipment to your system

You can connect the audio left and right OUT terminals of a TV, VCR, Laser Disc or DVD player to the AUX IN terminal at the rear of the system

E Adjusting the Operating Voltage

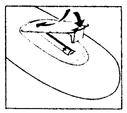
(available for version /21)

Before connecting the AC power cord to a wall outlet, make sure that the voltage selector at the rear of the system is set to the local power line voltage. If not, reset the selector before connecting to the wall outlet.

F AC Power Supply

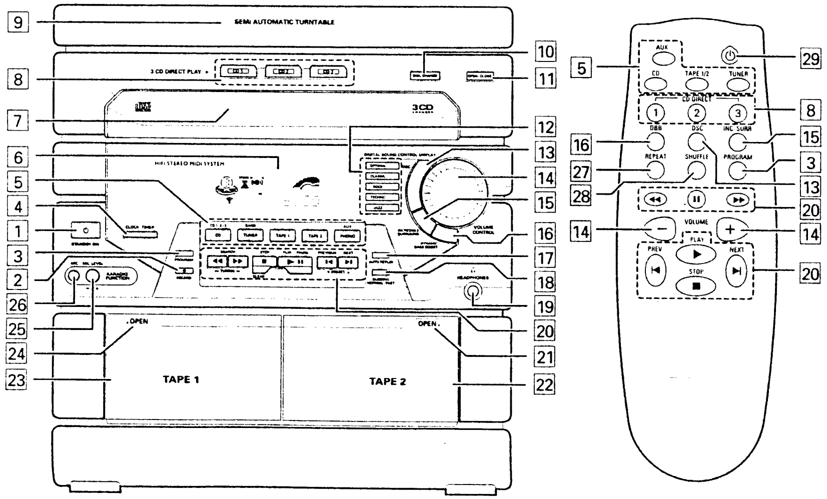
After all other connections have been made, connect the AC power cord to the system and to the wall outlet.

Inserting batteries into the Remote Control



- Insert the batteries (Type R03 or AAA) into the remote control as shown in the battery compartment.
- To avoid damage from possible battery leakage, remove dead batteries or batteries that will not be used for a long time. For replacement, use type R03 or AAA batteries.

Notes for remote control:
- *First select the source you wish to control by pressing one of the source select buttons on the remote control (e.g. CD, TUNER, TAPE 1/2 or AUX).*
- *Then select the desired function (PLAY, NEXT, etc.).*



Controls on the system and remote control

1 **STANDBY•ON**
- to switch the system on or to standby mode.
- to store radio stations automatically by pressing and holding for 2 seconds *(only in Standby or Demonstration mode)*

2 **RECORD**
- to start recording on tape deck 2 only

3 **PROGRAM**
- to program CD tracks in CD mode or preset radio stations in tuner mode.

4 **CLOCK•TIMER**
- to view clock, set clock or timer

5 **SOURCE SELECTION**
- to select the following:

CD (CD 1•2•3)	to select CD mode. When in CD stop mode, to select respective disc tray.
TUNER (BAND)	to select Tuner mode. When in Tuner mode; to select the waveband: FM or MW.
TAPE 1	to select Tape 1 mode
TAPE 2	to select Tape 2 mode.
PHONO (AUX)	to select Turntable mode or external source (e.g. DVD, TV, Laser Disc or VCR sound).

6 **DISPLAY**
- to view the current setting of the system

7 **CD CAROUSEL TRAY**

8 **3 CD DIRECT PLAY**
- to select a CD tray for playback

9 **TURNTABLE**

10 **DISC CHANGE**
- to change CD(s).

11 **OPEN•CLOSE**
- to open or close the CD carousel tray.

12 **DIGITAL SOUND CONTROL DISPLAY PANEL**
- to view the selected DSC setting.

13 **DIGITAL SOUND CONTROL (DSC)**
- to select the desired sound effect : OPTIMAL, CLASSIC, ROCK, TECHNO or JAZZ.

14 **VOLUME CONTROL**
- to adjust the volume level.

15 **INCREDIBLE SURROUND**
- to switch on or off the surround sound effect.

16 **DYNAMIC BASS BOOST (DBB)**
- to switch on bass boost to enhance the bass response or to switch off bass boost.

17 **AUTO REPLAY**
- to select playback mode either in continuous AUTO REPLAY or ONCE on tape deck 2 only.

18 **DUBBING**
- to dub a tape in normal or fast speed.

19 **HEADPHONES** 🎧
- to connect headphones jack.

20 **MODE SELECTION**

◀◀ SEARCH ▶▶ (◀◀ TUNING ▶▶)

for CD	to search backward/forward.
for TUNER	to tune to a lower or higher radio frequency.
for TAPE	to rewind or fast forward on tape deck 2 only.

STOP ■ (CLEAR)

for CD	to stop CD playback or clear a program.
for TUNER	to stop programming.
for TAPE	to stop playback or recording.

PLAY ▶ / PAUSE ❚❚

for CD	to start or interrupt playback
for TAPE	to start playback.

PREV ◀◀ / NEXT ▶▶ (▼ PRESET ▲)

for CD	to skip to the beginning of the current or previous/next track.
for TUNER	to select a preset radio station in memory.

21 **OPEN**
- to open tape deck 2.

22 **TAPE DECK 2**

23 **TAPE DECK 1**

24 **OPEN**
- to open tape deck 1.

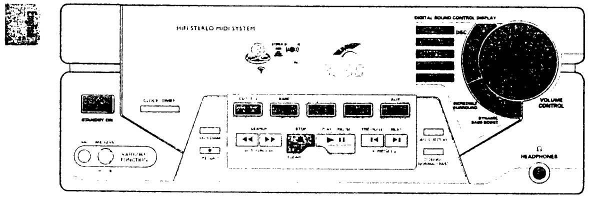
25 **MIC LEVEL** *(not available for version /30)*
- to adjust the mixing level for karaoke or microphone recording.

26 **MIC** *(not available for version /30)*
- to connect microphones jack.

27 **REPEAT**
- to repeat all available discs or program *(if available)*

28 **SHUFFLE**
- to play all the available discs and their tracks in random order.

29 ⏻
- to switch the system to standby mode.



Important:
Before you begin operating the system, complete the preparation procedures.

Demonstration mode

The system has a demonstration mode that shows the various features offered by the system. ***Whenever the system is switched on from the wall socket, the demonstration mode will start automatically.***

Notes:
- *During demonstration mode, if you press any source (or standby-on) button, the system will switch to the respective (or standby) mode.*
- *When the system is switched to standby mode, 5 seconds later, the demonstration mode will begin again.*

To cancel demonstration mode
- Press and hold **STOP ■** *(on the system only)* for ***3 seconds*** to stop the demonstration.
  → The demonstration mode will be switched off permanently.

Easy Set *(only in Standby or Demonstration mode)*

EASY SET allows you to store all available radio stations in a particular band (FM•MW) automatically (see Easy Set under Tuner).

Switching the system ON

- Press **STANDBY•ON** *(on the system only)*, **CD**, **TUNER**, **TAPE 1**, **TAPE 2** or **PHONO**.

You can also switch on the system by pressing any one of the 3 CD DIRECT PLAY buttons.

Switching the system to standby mode

- Press **STANDBY•ON** again.
  → The system will switch to standby mode.

Selecting the Source

- Press the respective source selection button: **CD**, **TUNER**, **TAPE 1**, **TAPE 2** or **PHONO**.
  → The display indicates the selected source.

Notes:
- *For an external source, make sure you have connected the audio left and right OUT terminals of the external equipment (TV, VCR, Laser Disc or DVD player) to the AUX IN terminals.*
- *Do not play both the Turntable or external source at the same time! If not, both the audio sound will be heard. You are advised to play only one source at any one time.*

Sound Control

VOLUME ADJUSTMENT
Adjust **VOLUME CONTROL** to increase or decrease the sound level.

For Personal Listening
Connect the headphones plug to the 🎧 socket at the front of the system. The speakers will be muted.

DIGITAL SOUND CONTROL (DSC)

The DSC feature enables you to enjoy special sound effects that have preset equalizer settings, providing the best music reproduction.

- Press **DIGITAL SOUND CONTROL (DSC)** to select **OPTIMAL**, **CLASSIC**, **ROCK**, **TECHNO** or **JAZZ**.
  - → The Digital Sound Control display panel will light up respectively.
  - → "OPTIMAL, CLASSIC, ROCK, TECHNO or JAZZ" will be displayed.

Automatic DSC-DBB selection

The best setting for the DBB is automatically generated for the respective DSC selection. You can also manually select the DBB setting that best suits your listening environment.

DSC Selection	DBB Selection
Optimal ←——→	On
Classic ←——→	Off
Rock ←——→	On
Techno ←——→	On
Jazz ←——→	On

DYNAMIC BASS BOOST (DBB)

The DBB mode enhances the bass response.

- Press **DBB** to switch on bass boost.
  - → The DBB button lights up.
  - → "DBB ON" will be displayed.

To switch off DBB

- Press **DBB** again.
  - → The DBB button light is switched off.
  - → "DBB OFF" will be displayed.

Note:

- *Some CDs or tapes might be recorded in high modulation. It may cause distortion at high volume. If this occurs, switch off Incredible Surround (if available), DBB or reduce the volume.*

INCREDIBLE SURROUND

Normal stereo sound is determined by the distance between the front speakers. When Incredible Surround is switched on, it magnifies the virtual distance between the front speakers for an incredibly wide, enveloping, stereo effect.

- Press **INCREDIBLE SURROUND** to switch on.
  - → The INCREDIBLE SURROUND button lights up.
  - → "IS" will be displayed.

To switch off Incredible Surround

- Press **INCREDIBLE SURROUND** again.
  - → The INCREDIBLE SURROUND button light is switched off
  - → "IS OFF" will be displayed.

Warning!

1) This system is designed for conventional CDs. Do not use any accessories like disc stabilizer rings or CD treatment sheets, etc., which may damage the CD mechanism.
2) Do not load more than one disc into each tray.
3) When the CD changer is loaded with CD(s), do not turn over or shake the system. This may jam the changer.

You can load up to three discs in the CD changer for continuous playback without interruption.

Loading the CD Changer

1 Press **CD** to select CD mode.
2 Press **OPEN•CLOSE**.
   → The CD compartment slides out.
3 Load a CD with the printed side up in the right tray.
- You can load another disc in the left tray.
- To load the third disc, press **DISC CHANGE**.
  - → The CD changer carousel will rotate until the empty tray is at the right hand side and is ready for loading.
  - → Playback will always start with the disc in the outer right disc tray.

4 Press **OPEN•CLOSE** to close the CD compartment.
   → The total number of tracks and playing time of the last selected disc appear on the display.

3 CD Direct Play

- You can play a CD directly by pressing the corresponding **3 CD DIRECT PLAY (1 - 3)** button. The CD player will stop at the end of playback of the selected disc.
  - → When the button is lighted, it indicates that there is a disc loaded in the disc tray.

Programming Tracks

Programming tracks of a loaded CD is possible in the stop mode. The display will indicate the total tracks stored in the program. Up to 40 tracks can be stored in the memory in any order. When 40 tracks are stored and you attempt to store another track, the display will show: "PROGRAM FULL".

1 Load the desired discs in the disc trays
2 Press **PROGRAM** to start programming
   → The PROGRAM flag starts flashing
3 Press the **CD (CD 1•2•3)** to select the desired disc
4 Press **PREV ⏮** or **NEXT ⏭** to select the desired track.
5 Press **PROGRAM** to store the track.
- Repeat steps ***3*** to ***5*** to store other discs and tracks

6 Press **STOP ■** once to end programming mode
   → The total number of tracks programmed and total playing time appear on the display.

Notes

- *If the total playing time is more than "99:59" or if one of the programmed tracks has a number greater than 30, then "- - : - -" appears in the display instead of the total playing time.*
- *During programming, If no button is pressed within 20 seconds, the system will exit program mode automatically.*

Playing the program

1 Press **PLAY ▶** to start program playback.
   → "PLAY PROGRAM" will be displayed
   → The track number and elapsed playing time of the current track will appear on the display
- If you press **REPEAT** during program playback, the program will be played repeatedly.
  - → The REPEAT and PROGRAM flags will be displayed.

2 Press **STOP ■** to stop program playback.

Note:

- *If you press any of the 3 CD DIRECT PLAY buttons, the system will play the selected disc or track and the stored program will be ignored temporarily. The PROGRAM flag will also temporarily disappear from the display and then reappear, when the playback for the selected disc ends.*

Reviewing the program

Reviewing of the program is only possible in the stop mode.

- Press **PREV ⏮** or **NEXT ⏭** repeatedly to review the programmed tracks.
- Press **STOP ■** to exit review mode.

Erasing the program *(in the stop mode)*

- Press **CLEAR** on the system.
  - → "PROGRAM CLEARED" will be displayed.

Note:

- *The program will be erased when the system is disconnected from the power supply. If the CD carousel is opened, the tracks belonging to the outer two trays will be erased and the display will show "CLEARED".*

Shuffle *(only on remote control)*

It will play all the available discs and their tracks in random order. Shuffle may also be used when tracks are programmed.

To shuffle all the discs and tracks

1 Press **SHUFFLE**.
   → "SHUFFLE" will be displayed.
   → The SHUFFLE flag, the disc and the track selected at random appear on the display.
- The discs and the tracks will now be played in random order until you press **STOP ■**.
- If you press **REPEAT** during shuffling, all the available tracks will be played repeatedly in random order.
  - → The REPEAT and SHUFFLE flags will be displayed.

2 Press **SHUFFLE** again to resume normal playback.
   → The SHUFFLE flag disappears from the display.

Note:

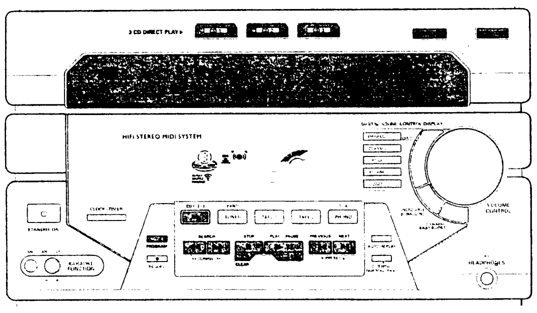
- *All the available discs will be played once, then stop, unless REPEAT is selected.*

Repeat *(only on remote control)*

It will play all the available tracks repeatedly.

1 Press **REPEAT** during playback.
   → "REPEAT ALL" will be displayed.
   → The REPEAT flag and the track selected appear on the display.
- All the tracks will now be played repeatedly until you press **STOP ■**.

2 Press **REPEAT** again to resume normal playback.
   → The REPEAT flag disappears from the display.



Playing a CD

1 Press **PLAY ▶** to start playback.
   → The disc tray, track number and elapsed playing time of the current track appear on the display.
   → The LED on the respective 3 CD Direct Play button will be flashing.
- To interrupt playback, press **PAUSE ❚❚**.
  - → The playing time flashes.
- To resume playback, press **PLAY ▶** again.

2 To stop playback, press **STOP ■**.

Note:

- *All the available discs will be played once, then stop. When the CD has stopped playing, the system will switch to the standby mode after 15 minutes if no button is pressed.*

Disc Change

You can change the outer 2 discs while the third inner disc is at the stop or playback mode.

1 Press **DISC CHANGE**.
   → The CD compartment slides out.
2 Replace the discs in the left and right disc trays.
- If you press **DISC CHANGE** again during playback, the CD will stop playing.
  - → The CD carousel tray will rotate until the inner tray is at the right hand side and is ready for changing.

3 Press **OPEN•CLOSE** to close the CD compartment.

Selecting a desired track

Selecting a desired track at the stop mode

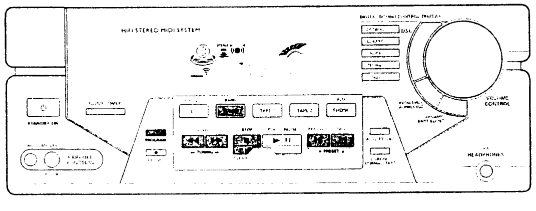
1 Press **PREV ⏮** or **NEXT ⏭** until the desired track appears on the display.
2 Press **PLAY ▶** to start playback.
   → The selected track number and elapsed playing time appear on the display.

Selecting a desired track during playback

1 Press **PREV ⏮** or **NEXT ⏭** until the desired track appears on the display.
   → The selected track number and elapsed playing time appear on the display.
- If you press **PREV ⏮** once it will skip to the beginning of the current track and play the track again.

Searching for a particular passage during playback

- Press and hold ◀◀ or ▶▶ until the desired passage is located.
  - → The volume will be reduced.
- Playback returns to normal when ◀◀ or ▶▶ is released.



Easy Set *(only in Standby or Demonstration mode)*

EASY SET allows you to store all available radio stations in a particular band (FM•MW) automatically.

- Press and hold **STANDBY•ON** *(on the system only)* for 2 seconds.
  - → "EASY SET" will be displayed and followed by "TUNER"
  - → Easy set will start with the last active band.
  - → All available radio stations with sufficient signal strength will be stored until 40 presets are filled.

Notes:

- *When EASY SET is used, all previously stored stations will be erased.*
- *The last preset station will appear on the display when Easy Set is completed*

Tuning to Radio Stations

1 Press **TUNER** to select TUNER mode.
   → "TUNER" will be displayed.
   → The preset station number, frequency and waveband appear on the display.
2 Press **TUNER (BAND)** again to select the desired waveband : FM or MW.
3 Press **TUNING ◀◀** or **▶▶** for more than one second, then release.
   → The display will show "SEARCH" until a radio station with sufficient signal strength is found.
- Repeat this procedure until the desired radio station is reached.
- To tune to a weak station, briefly press **TUNING ◀◀** or **▶▶** until the display shows the desired frequency and/or when the best reception has been obtained.

Storing Preset Radio Stations

You can store up to 40 radio stations in the memory. When a preset radio station is selected, the preset number appears next to the frequency on the display.

Automatic programming

1 Press **TUNER**.
2 Press **TUNER (BAND)** again to select the desired waveband : FM or MW.
3 Press **PROGRAM** for more than one second.
   → PROGRAM flag starts flashing and 'AUTO' will be displayed.
   → Every available radio station will be stored automatically. The frequency and preset number will be displayed briefly.
   → The system will stop searching when all the available radio stations are stored or when the memory for 40 preset radio stations is used.
   → The system will remain tuned to the last stored preset radio station.
- Repeat the above procedure to store other preset stations for the other waveband. Remember to select the next available preset number before proceeding. If not, some of the preset radio stations may be erased.

Notes:

- *You can cancel the automatic programming by pressing PROGRAM or STOP ■.*
- *If you want to reserve a section of preset numbers, for example preset numbers 1 to 9, select preset 10 before starting automatic programming: now only the preset numbers 10 to 40 will be programmed.*

Manual programming

1 *Press* ***TUNER***.
2 Press **TUNER (BAND)** to select the desired waveband: FM or MW.
3 Press **PROGRAM** for less than one second
  → PROGRAM flag, the frequency and preset station number start flashing
  → The next available preset number will be displayed for selection.
4 Press **TUNING** ◀◀ or ▶▶ to tune to the desired frequency
- When all 40 presets are stored, no preset number is shown.
  → The message "PROGRAM FULL" will be displayed.
- If you wish to store the radio station to another preset number, press **PRESET** ▼ or ▲ to select the desired preset number.

5 Press **PROGRAM** again
  → PROGRAM flag will stop flashing, and the radio station will be stored.

- Repeat the above procedure to store other preset radio stations.

Notes.
- *You can cancel the manual programming by pressing STOP* ■ .
- *During programming , If no button is pressed within 20 seconds, the system will exit program mode automatically.*

Tuning to Preset Radio Stations

- Press **PRESET** ▼ or ▲ to select the desired preset number.
  → The preset number, frequency and waveband appear on the display.

Changing the MW tuning grid

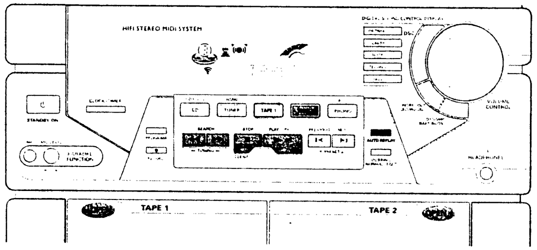
The frequency step can be changed if necessary. In North and South America, the frequency step between adjacent channels in the MW band is 10 kHz. In other parts of the world, it is 9 kHz. The frequency step presetted in the factory is 9 kHz.

For MW band
To change from 9 kHz to 10 kHz or vice versa

Changing of tuning grid will erase all previously stored preset stations.

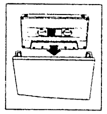
1 Disconnect the system from the AC power supply *(pull out the AC power cord).*
2 Press **TUNER** and **TUNING** ▶▶ depressed while reconnecting the system to the AC power supply.
  → Display will show "TUNER" and follow by "GRID 9" or "GRID 10".

Notes:
- *GRID 9 indicates that the tuning grid is in step of 9 kHz in MW band. GRID 10 indicates that the tuning grid is in step of 10 kHz in MW band.*
- *FM tuning grid will also be changed from 50 kHz to 100 kHz or vice versa. All preset radio stations will also be erased.*



Loading a tape

- Press **OPEN**.
- The tape deck door opens.
- Load the tape with the open side downward and the full spool to the left.
- Close the tape deck door.



Tape Playback

1 Press **TAPE 1** or **TAPE 2** to select either tape deck 1 or tape deck 2.
  → "TAPE 1" or "TAPE 2" will be displayed.
2 Load the tape into the desired tape deck.
3 Press **PLAY** ▶ to start playback.
3a *(For Tape Deck 2 only)*
  Press **AUTO REPLAY** to select the different type of playback mode *(see auto replay).*
4 Press **STOP** ■ to end playback.

Note:
- *When the tape has stopped playing, the system will switch to the standby mode automatically after 15 minutes if no button is pressed.*

Auto Replay *(only on tape deck 2)*

- Press **AUTO REPLAY** to select either continuous AUTO REPLAY or ONCE during tape playback.
  → "AUTO REPLAY" or "ONCE" will be displayed.

Notes:
- *This feature is available during tape playback only.*
- *When "AUTO REPLAY" is selected, the tape will rewind automatically at the end of playback for the selected side. Then it will start playing again. It will replay upto a maximum of 20 times or when you press STOP* ■ .
- *When "ONCE" is selected, the tape will play the selected side once and then stop.*

Rewind/Fast Forward *(only on tape deck 2)*

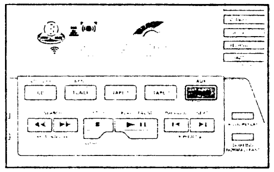
At the stop mode

1 You can rewind or fast forward the tape by pressing ◀◀ or ▶▶ respectively.
  → "⟪⟪ or ⟫⟫" will be displayed depending on which button is pressed.
  → The tape will stop automatically at the end of the rewinding or fast forwarding.
2 Press **STOP** ■ to stop rewind or fast forward.

During playback

- Press and hold ◀◀ or ▶▶ respectively until the desired passage is located.
  → During searching, the sound is reduced to a low volume.
  → When you release ◀◀ or ▶▶, the tape continues playing.

Notes
- *During rewinding or fast forwarding a tape, it is possible to select another source (e.g. CD, TUNER or PHONO)*
- *Check and tighten slack tape with a pencil before use. Slack tape may get jammed or may burst in the mechanism*
- *C-120 tape is extremely thin and is easily deformed or damaged. It is not recommended for use in this system*
- *Store the tapes at room temperature and do not put them too close to a magnetic field (for example, a transformer, TV or loudspeaker boxes)*

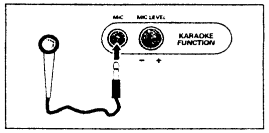


Selecting External Equipment

If you have connected the audio out terminals of the external equipment (TV, VCR, Laser Disc or DVD player) to the AUX IN terminals, you can hear the sound from the system.

- Press **PHONO (AUX)** to select the external mode.
  → "AUX/PHONO" will be displayed.

Note:
- *All the sound control features (e.g. DSC, DBB, etc.) are available for selection.*

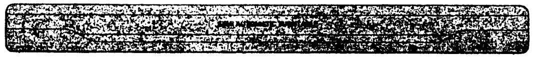


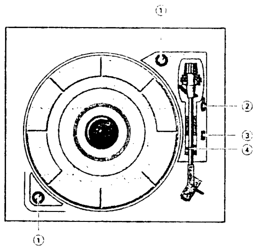
Karaoke

Microphone mixing

1 Set the **MIC LEVEL** control to the minimum level to prevent acoustic feedback (e.g. a loud howling sound) before you connect the microphone.
2 Connect a microphone to the **MIC** socket.
3 Press **CD**, **TUNER**, **TAPE 1**, **TAPE 2** or **PHONO**.
4 Play the selected source.
5 Adjust the volume level with **VOLUME CONTROL**.
6 Adjust the **MIC LEVEL** control to the mixing level that you want.
7 Start singing or talking through the microphone.

Note:
- *It is advisable to switch off Incredible Surround during karaoke.*





CD
TUNER
TAPE
TAPE 2
BAND
AUX

Turntable Controls

① Transport safety screws.
② Pick up arm lever for raising and lowering the pick up arm.
③ RPM selector for selecting the appropriate speed at 33 or 45 rpm.
④ Pick up arm lever clamp

Note:

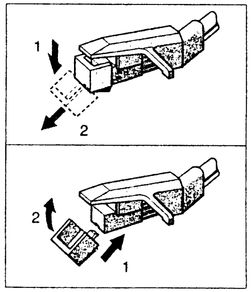
Preparation for use

Fully tighten both record player transport safety screws. Screw in clockwise direction.

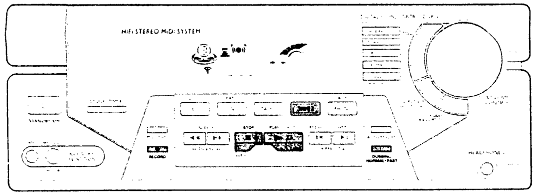
Turntable Operation

1 Press **PHONO (AUX)**.
2 Place a record on the turntable.
3 Remove the stylus guard by gently pulling it forward.
4 Set the appropriate speed - 33 or 45 - on the rpm selector.
5 Release the pickup arm from its clamp.
6 Set the lever to ⊻ (UP).
7 Move the pickup arm inwards. This starts the record player. Then position the arm above the desired track or passage on the record.
8 Move the lever carefully to the ⊻ (DOWN) position. Playback of the record begins.
9 At the end of the record the pickup arm returns to its support and the record player is automatically switched off.
10 Record playback can be stopped at any given time by setting the lever to the ⊻ (UP) position and then moving the pickup arm outwards.
   When the pickup arm reaches the support, the turntable will stop. The lever can now be set to the ⊻ (DOWN) position, the arm secured and the stylus guard replaced.

Notes:
- *At first it is possible that the pickup arm will not return to its support. If this happens, move the pickup arm by hand - gently! - to the centre of the record. Once the mechanism has been actuated in this way, it will subsequently operate automatically.*
- *To change needle gently pull it down and take it out (see figure below). Replace the needle with same model by pushing to the original place. The "click" indicates that the new needle is fixed.*



RECORDING



Notes:
- *If you do not intend to record via the microphone, unplug the microphone to avoid accidental mixing with other recording sources.*
- *For recording, use only tape of IEC type 1 (normal tape) or IEC type II (Chrome).*
- *The tape is secured at both ends with leader tape. At the beginning and end of tape, nothing will be recorded for six to seven seconds.*
- *The recording level is set automatically, regardless of the position of VOLUME, DBB or Incredible Surround.*
- *To prevent accidental recording, break out the tab on the left shoulder of the tape side that you want to protect.*
- *If "CHECK TAPE" is displayed, the protection tab has been broken. Put a piece of clear adhesive tape over the opening. Do not cover the CrO_2 tape detection hole when covering the tab opening.*

Recording the mixed sound/One Touch Recording

- During microphone mixing, you can record the mixed sound on a tape in tape deck 2 except dubbing mode *(not available for version /30)*.
- For One Touch Recording, as soon as you press RECORD, the current source will be recorded on tape deck 2.

1 Load a blank tape in tape deck 2.
2 Press **RECORD ●** to start recording.
   → The REC flag starts flashing.
3 Press **STOP ■** to stop recording.

Note:
- *When you press RECORD at TAPE 2 mode, "SELECT OTHER SOURCE" will be displayed. One Touch Recording is not possible at TAPE 2 mode.*

Recording from other sources *(only on tape deck 2)*

1 Press **TAPE 2** to select tape deck 2
2 Load a blank tape into tape deck 2 with the open side downward.
3 Press **CD**, **TUNER** or **PHONO**.
- Start playback of the selected source.

4 Press **RECORD ●** to start recording.
   → The REC flag starts flashing.
5 Press **STOP ■** to stop recording.

Note:
- *During recording, it is not possible to listen to another source.*

Dubbing tapes *(from tape deck 1 to tape deck 2)*

1 Press **TAPE 2** to select tape deck 2
2 Load the prerecorded tape into tape deck 1 and a blank tape into tape deck 2.
   → Make sure that the tape in tape deck 1 has its full spool to the left.
3 Press **DUBBING *once*** for normal speed dubbing or ***twice*** *(within 2 seconds)* for high speed dubbing.
   → "NORMAL" (normal speed) or "FAST" (high speed) will be displayed and then followed by "DUBBING".
   → The HSD flag appears on the display for high speed dubbing.
- Dubbing will start immediately.
   → The REC flag starts flashing.

4 Press **STOP ■** to stop dubbing.

RECORDING

Notes:
- *At the end of side A, flip the tapes to side B and repeat the procedure.*
- *Dubbing of tapes is only possible from tape deck 1 to tape deck 2.*
- *To ensure good dubbing, use tapes of the same length.*
- *During high speed dubbing in Tape mode, the sound is reduced to a low volume.*
- *You can switch to other source while dubbing.*

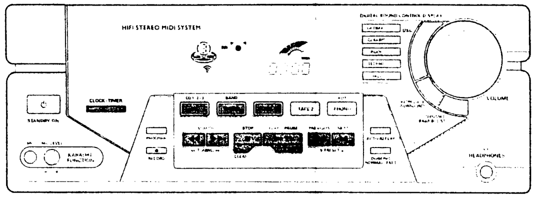
CD Synchro Start Recording

1 Load a blank tape into tape deck 2 and a disc into the disc tray.
2 Press **CD** to select CD mode.
- You can program the tracks in the order you want them to be recorded (see Programming Tracks). If not, the tracks are recorded according to the selected disc.

3 Press **RECORD ●** to start recording.
   → The REC flag starts flashing.
- CD will start playback automatically.

4 Press **STOP ■** to stop recording.

CLOCK



View Clock

You can view the clock (if it is set) at standby or any source mode. It will be displayed for about 7 seconds.

- Press **CLOCK•TIMER** briefly.
   → " 10:25" (the current time) will be displayed.
   → "- - : - -" will be displayed if the clock is not set.

Clock setting

The clock is set in 24-hour mode, e.g. 00:00 or 23:59. Before setting the clock, you must be at the View Clock mode.

1 Press **CLOCK•TIMER** to select clock mode.
   → "00:00" or the current time starts flashing.
   → "◀◀, ▶▶, |◀, ▶|, ■" light up.
2 Set the hour with ◀◀ or ▶▶.
3 Set the minute with |◀ or ▶|.
4 Press **CLOCK•TIMER** again to store the setting.
   → The clock starts running.
- To **exit** without storing the setting, press **STOP ■**.

Notes:
- *During clock setting, if no button is pressed within 90 seconds, the system will exit clock setting mode automatically.*
- *When power interruption occurs, the clock setting is erased.*

TIMER

Timer Setting

- The system can switch on to CD, TUNER or TAPE 1 mode automatically at a preset time. It can serve as an alarm to wake you up. After half an hour from the preset time, the system will return to the standby mode if no button is pressed.
- Before setting the timer, make sure the clock is set correctly.
- The timer has to be reset or start again for each subsequent preset time.
- **The volume of the timer will be at the last setting before the system is switched to standby mode.**

1 Press and hold **CLOCK•TIMER** for more than 2 seconds to select timer mode.
   → "ON 00:00" or the last set timer starts flashing. The TIMER flag will be displayed.
   → The last selected source is lighted while other available sources are flashing.
   → "◀◀, ▶▶, |◀, ▶|, ■" light up.
2 Press **CD**, **TUNER** or **TAPE 1** to select the desired source.
- Before selecting CD or TAPE mode, make sure that a CD or tape is loaded respectively in the CD tray or tape deck 1.

3 Press ◀◀ or ▶▶ to set the hour for the timer to start.
4 Press |◀ or ▶| to set the minute for the timer to start.
5 Press **CLOCK•TIMER** again to store the start time and the selected source.
   → The TIMER is now set.
   → The TIMER flag remains on the display.
- To exit without storing the setting, press **STOP ■**.
- At the preset time, the TIMER will be activated.
   → The selected source will be played.
   → The TIMER flag disappears from the display.

Notes:
- *During timer setting, if no button is pressed within 90 seconds, the system will exit timer setting mode automatically.*
- *If the source selected is TUNER, the last tuned frequency will be switched on.*
- *If the source selected is CD, playback will begin with the first track of the last selected disc. If the CD trays are empty, the TUNER will be selected instead.*
- *If the source selected is TAPE 1, and if the preset time is reached during high speed dubbing, the TUNER will be selected instead.*

To cancel the TIMER
1 Press **CLOCK•TIMER** for more than 2 seconds.
2 Press **PAUSE ❚❚** to cancel the timer.
   → "CANCEL" will be displayed.
   → The TIMER flag disappears from the display.

To start the TIMER again *(for the same time)*
1 Press **CLOCK•TIMER** for more than 2 seconds.
2 Press **CLOCK•TIMER** again to store the start time and the selected source.

MAINTENANCE

Maintenance

Cleaning the Cabinet
- Use a soft cloth slightly moistened with a mild detergent solution. Do not use a solution containing alcohol, spirits, ammonia or abrasives.

Cleaning Discs
- When a disc becomes dirty, clean it with a cleaning cloth. Wipe the disc from the center out.
- Do not use solvents such as benzine, thinner, commercially available cleaners, or antistatic spray intended for analog records.

Cleaning the CD lens
- After prolonged usage, dirt or dust may accumulate at the CD lens. To ensure good playback quality, clean the CD lens with Philips CD Lens Cleaner or any commercially available. Follow the instructions supplied with the Lens Cleaner.

Cleaning the Tape Heads and the Tape Paths
- To ensure good recording and playback quality, clean the heads, capstan(s) and pressure roller(s) after every 50 hours of tape operation.
- Use a cotton swab slightly moistened with cleaning fluid or alcohol.
- You can also clean the heads by playing a cleaning tape through once.

Demagnetizing the heads
- Use a demagnetizing tape available at your dealer.

TROUBLESHOOTING

Warning! Under no circumstances should you try to repair the system yourself, as this will invalidate the warranty.

- If a fault occurs, check the points listed below before taking the system for repair.
- Should any problems persist after you have made these checks, consult your nearest dealer or service center.

CD Player Operation

"NO DISC" is displayed.
- The disc is inserted upside down.
- → *Place CD with printed side up.*
- Moisture condensation at the lens.
- → *Wait until lens has adjusted to normal room temperature.*
- There is no disc in the CD tray.
- → *Insert a CD.*
- The CD is dirty, badly scratched or warped.
- → *Clean or replace the CD.*
- The CD lens is dirty or dusty.
- → *See section under Maintenance.*

Radio Reception

Poor radio reception.
- The signal strength is too weak.
- → *Adjust the antenna.*
- The TV or VCR is too close to the stereo system.
- → *Separate the stereo system from the TV or VCR.*
- → *Connect an external antenna for better reception.*

Cannot tune to station.
- Wrong tuning grid.
- → *Switch to the correct tuning grid.*

TROUBLESHOOTING

Tape Deck Operation

"RECORDING ACTIVE" is displayed.
- A recording is in progress
- → *Stop the recording or wait until it is finished.*

"TAPE DUBBING ONLY" is displayed.
- Tape dubbing is only possible in tape mode.
- → *Switch source to tape mode.*

Recording or playback cannot be made or there is a decrease in audio level.
- Dirty tape heads, capstans or pressure rollers.
- → *See section on tape deck maintenance.*
- Magnetic build-up in the record/playback head.
- → *Use demagnetizing tape.*

Turntable Operation

No or poor sound.
- PHONO source is not selected.
- → *Select PHONO by pressing the PHONO (AUX) button.*
- Needle is dirty.
- → *Clean or change the needle.*

Pickup arm jumps out of the groove.
- The turntable is not positioned on a level surface.
- → *Position the turntable on the level surface.*

General

System does not react when any button is pressed.
- Electrostatic discharge
- → *Press STANDBY•ON to switch the system off. Remove the AC power plug from the wall outlet, then reconnect and switch on the system again.*

No or poor sound.
- Volume is not turned up.
- → *Adjust VOLUME.*
- The headphones are connected.
- → *Disconnect the headphones*
- Speakers are not connected or are connected wrongly.
- → *Check that the speakers are connected correctly.*
- → *Make sure that the stripped speaker wire is clamped.*

Reversed left and right sound.
- Speakers are incorrectly connected
- → *Check the speaker connections and location*

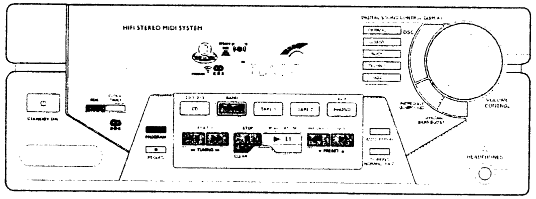
Lack of bass sound or apparently imprecise physical location of musical instruments.
- Speakers are incorrectly connected.
- → *Check the speaker connection for proper phasing, red/black wires to red/black terminals.*

Remote control has no effect on the system.
- Wrong source is selected.
- → *Select the source (CD, TUNER, etc.) before pressing the function button (PLAY, PREV/NEXT, etc.)*
- The distance to the system is too large.
- → *Reduce the distance.*
- Batteries are inserted incorrectly.
- → *Insert the batteries with their polarities (+/- signs) as indicated.*
- Batteries are exhausted.
- → *Replace the batteries.*

Timer not working.
- Timer is not switched on
- → *Press CLOCK•TIMER on the system to switch on the timer.*
- Dubbing/recording is in progress
- → *Stop dubbing/recording.*

System display features automatically and buttons flashing continuously.
- Demonstration mode is switched on.
- → *Press and hold STOP ■ for 3 seconds to switch off the demonstration mode*

ADDITIONAL FEATURES FOR EUROPEAN VERSIONS



Easy Set *(only in Standby or Demonstration mode)*

EASY SET allows you to store all available radio stations and RDS stations in a particular band (FM•MW) automatically.

1 Press and hold **STANDBY•ON** *(on the system only)* for 2 seconds.
   - → "EASY SET" will be displayed and followed by "TUNER".
   - → Easy set will start with the last active band.
   - → All available radio stations with sufficient signal strength will be stored or until 40 presets are filled.

2 The system will search once again for the first available RDS station and to set the RDS time automatically.

- When searching RDS station;
  - → "SEARCH RDS STATION" will be displayed. If no RDS station is available, the program will exit automatically.
  - → After a station is found, "EASY SET" will be displayed and followed by "TIME".
- When searching RDS time;
  - → "SEARCH RDS TIME" will be displayed.
  - → When RDS time is read, "RDS TIME" will be displayed. The current time is displayed for 2 seconds and will be stored automatically.

Notes :
- *When EASY SET is used, all previously stored stations will be erased.*
- *The last preset station or the first available RDS will appear on the display when Easy Set is completed.*
- *If RDS station does not transmit RDS time within 90 seconds, the program will exit automatically and the display will show* "NO RDS TIME".

Receiving RDS radio station

RDS (Radio Data System) is a broadcasting service that allows FM stations to send additional information along with the regular FM radio signal. This additional information can contain:

- **STATION NAME:** The station name is displayed.
- **FREQUENCY:** The frequency of the station is displayed.
- **PROGRAM TYPE:** The following program types exist and can be received by your tuner: News, Affairs, Info, Sport, Educate, Drama, Culture, Science, Varied, Pop M, Rock M, M.O.R. (middle of the road music), Light M, Classics, Other M, No type.
- **RADIO TEXT (RT):** text messages appear in the display.

When you have tuned to a RDS station, the RDS logo (and the station name will appear on the display:

- The display normally shows the radio station name if available.
  By repeatedly pressing **RDS** button you can change the type of display information:
  - → The display shows in turn:
    STATION NAME – FREQUENCY –
    PROGRAM TYPE – RADIO TEXT –
    STATION NAME ...

Note:
- *When you press the RDS button and the display shows* "NO RDS"*, it indicates that either the tuned station is not transmitting RDS signal or it is a non RDS station.*

RDS Time

Some RDS station may be transmitting a real clock time at an interval of every minute.

Setting the time with RDS clock

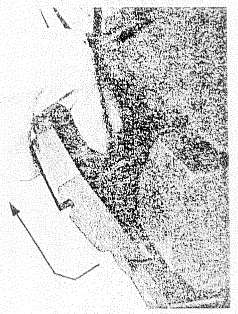
1 Press **CLOCK•TIMER**.
   - → "- - : - -" or current time appears on the display.

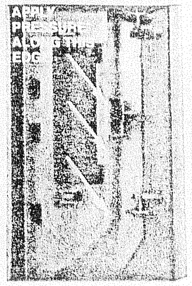
2 Press **CLOCK•TIMER** once more to enter clock setting mode.
   - → "00:00" or current time starts flashing.

3 Press **RDS**.
   - → The message "SEARCH RDS TIME" will be displayed.
   - → If the station does not transmit RDS clock, "NO RDS TIME" will be displayed.
   - → When the RDS clock is read, "RDS TIME" will be displayed. The current clock time is displayed for 2 seconds and will be stored automatically.

DISMANTLING INSTRUCTIONS

Dismantling of the Cassette Cover

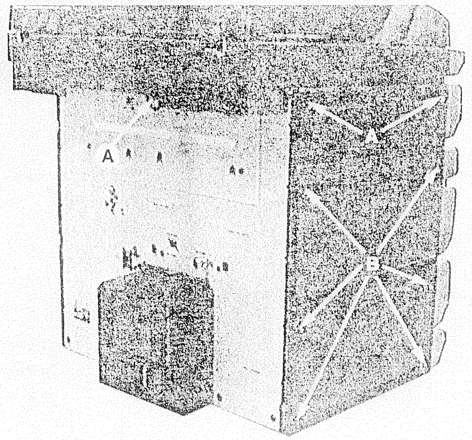




Cassette door

Dismantling of the Record Player and Side Plates

1) Loosen 5 screws A as indicated to remove the Record Player.
   - 2 screws each on the Side Plate Left & Side Plate Right
   - 1 screw at the rear
2) Loosen 2 x 6 screws B as indicated to remove the Side Plate Left (pos 284) and the Side Plate Right (pos 285).



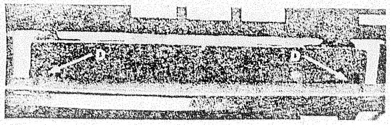
Dismantling of the CDC Module and Front Panel

1) Loosen 2 screws C (see Rear Portion picture) to remove the Plate EMC (pos 214).

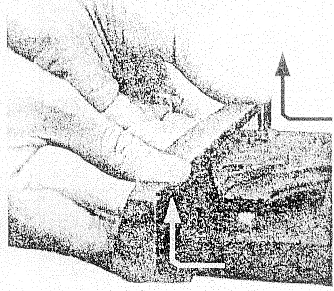
2) Slide out the tray and remove the Cover Tray CDC (pos 202) as indicated.

3) Loosen 2 screws D and 2 screws E (see Rear Portion picture) as indicated to remove the CDC Module (pos 1104).

5) Remove 3 screws (pos 290) at the bottom to separate the Front Panel Assembly from the Plate Bottom (pos 308).



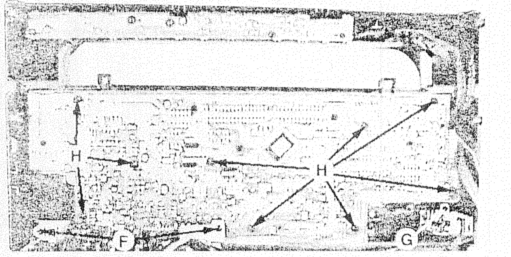
Front CDC



Remove Cover Tray CDC

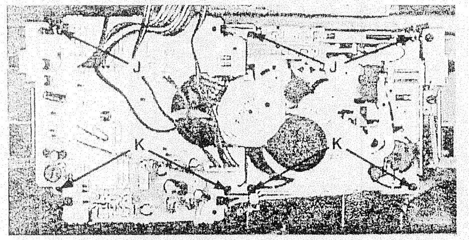
Dismantling of the Front Board

1) Remove 2 screws F as indicated to loosen the AF Board (pos 1101).
2) Remove 1 screw G as indicated to loosen the Karaoke Board (pos 1102-C) for karaoke version.
3) Remove 9 screws H as indicated to loosen the Front Board (pos 1102).



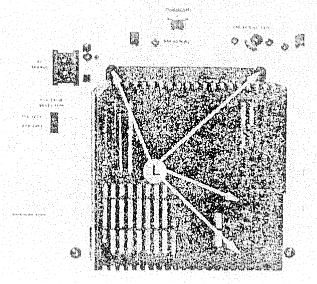
Dismantling of the ETF Module

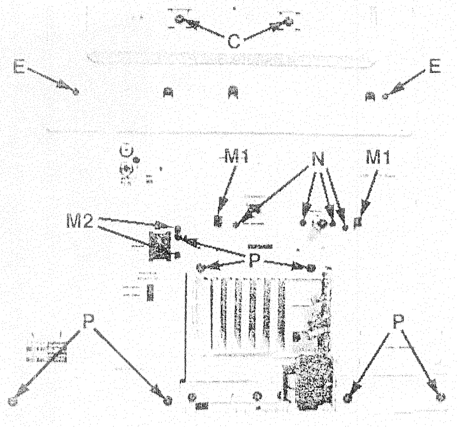
1) Remove 7 screws (3 screws J and 4 screws K) as indicated to loosen the ETF6 Module (pos 1105).



Dismantling of Rear Portion

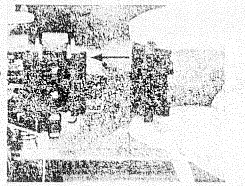
1) Remove 4 screws L as indicated to take out the Rucksack (pos 306).
2) Remove 4 screws N and uncatch M1 as indicated to loosen the Tuner Board (pos 1100).
3) Remove 7 screws P and uncatch M2 as indicated to take out the Plate Rear (pos 302).



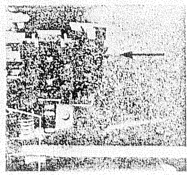


Repair Hints

1) During re-assembly of the Plate Rear (pos 302), place the Bracket Mains Socket (pos 311) behind the Mains Socket and catch it onto the Plate Rear (pos 302). See pictures 1 and 2.



Picture 1

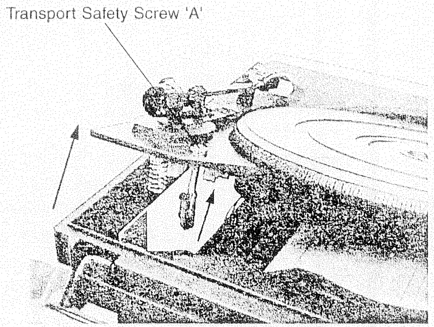


Picture 2

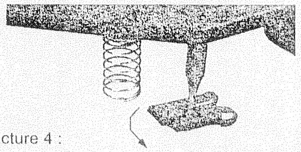
2) During re-assembly of the Rucksack (pos 306), care should be taken to align all Loudspeaker sockets into the openings.

3) During repair it is possible to disconnect the Tuner board, CDC Module and Record Player completely unless the fault is suspected to be in that area. This will not affect the performance of the rest of the set.

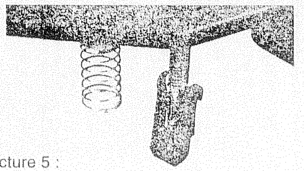
4) The Turntable (pos 295) can be separated from the Housing (pos 296) by turning the catch of the Transport Safety Screw 'A' straight and lift it upward. See picture 3, 4 and 5.



Picture 3

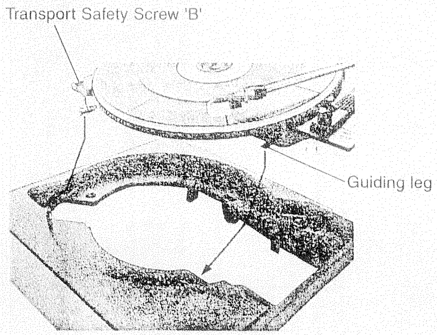


Picture 4 :
Position of the Transport Safety Screw 'A' when locking the Turntable to the Housing.



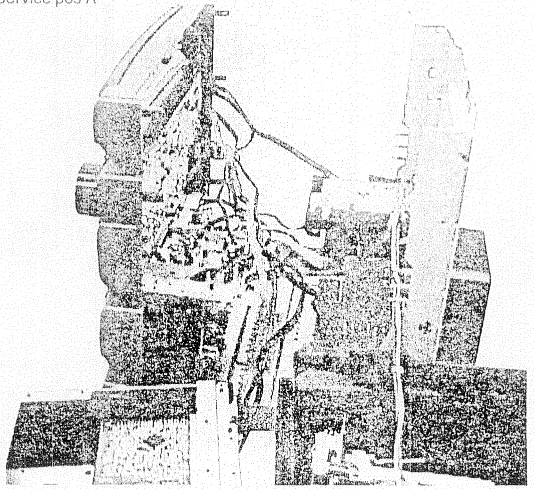
Picture 5 :
Position of the Transport Safety Screw 'A' when lifting up and placing down of the Turntable.

5) When placing the Turntable (pos 295) back to the Housing (pos 296), make sure the Transport Safety Screw 'B' is placed into the slot as indicated by the arrow, and the 'Guiding leg' of the Turntable is placed under the point as indicated by the arrow. See picture 6.

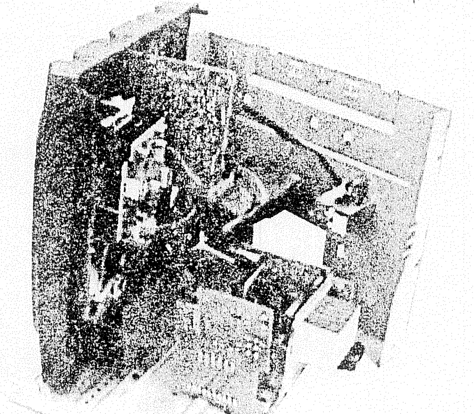


Picture 6

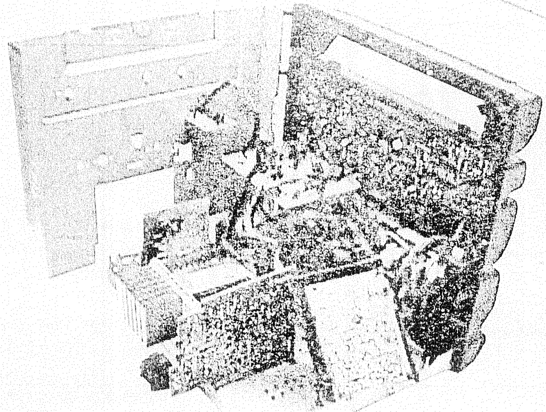
Service pos A



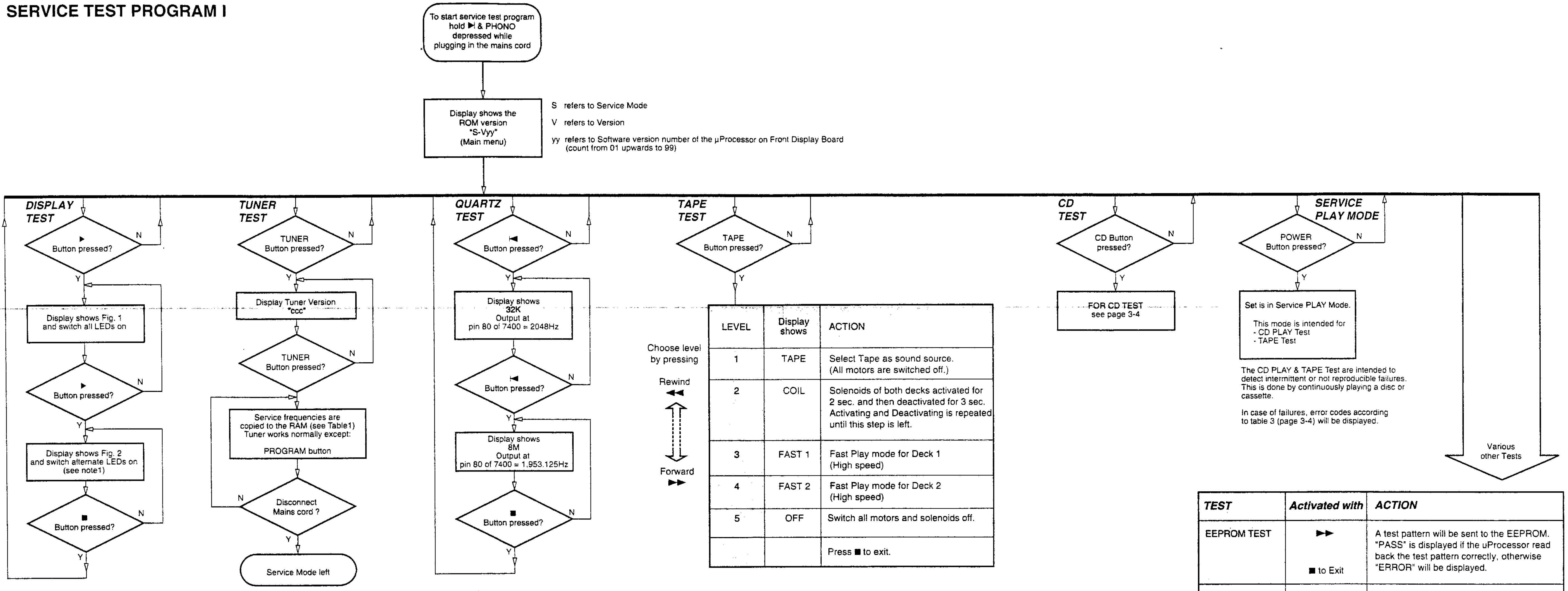
Service pos B



Service pos C



SERVICE TEST PROGRAM I


To start service test program hold ▶| & PHONO depressed while plugging in the mains cord
Display shows the ROM version "S-Vyy" (Main menu)
DISPLAY TEST
▶ Button pressed?
N
Y
Display shows Fig. 1 and switch all LEDs on
▶ Button pressed?
Display shows Fig. 2 and switch alternate LEDs on (see note1)
■ Button pressed?
TUNER TEST
TUNER Button pressed?
Display Tuner Version "ccc"
TUNER Button pressed?
Service frequencies are copied to the RAM (see Table1) Tuner works normally except: PROGRAM button
Disconnect Mains cord ?
Service Mode left
QUARTZ TEST
|◀ Button pressed?
Display shows 32K Output at pin 80 of 7400 = 2048Hz
|◀ Button pressed?
Display shows 8M Output at pin 80 of 7400 = 1,953.125Hz
■ Button pressed?
TAPE TEST
TAPE Button pressed?
Choose level by pressing
Rewind
◀◀
Forward
▶▶
CD TEST
CD Button pressed?
FOR CD TEST see page 3-4
SERVICE PLAY MODE
POWER Button pressed?
Set is in Service PLAY Mode.
This mode is intended for
- CD PLAY Test
- TAPE Test
Various other Tests

S refers to Service Mode
V refers to Version
yy refers to Software version number of the µProcessor on Front Display Board (count from 01 upwards to 99)

The CD PLAY & TAPE Test are intended to detect intermittent or not reproducible failures. This is done by continuously playing a disc or cassette.

In case of failures, error codes according to table 3 (page 3-4) will be displayed.

LEVEL	Display shows	ACTION
1	TAPE	Select Tape as sound source. (All motors are switched off.)
2	COIL	Solenoids of both decks activated for 2 sec. and then deactivated for 3 sec. Activating and Deactivating is repeated until this step is left.
3	FAST 1	Fast Play mode for Deck 1 (High speed)
4	FAST 2	Fast Play mode for Deck 2 (High speed)
5	OFF	Switch all motors and solenoids off.
		Press ■ to exit.

PRESET	Europe "EUR"	East Europe Extended-band "EAS"	USA "USA"	Oversea "OSE"
1	87.5MHz	65.81MHz	87.5MHz	87.5MHz
2	108MHz	108MHz	108MHz	108MHz
3	531kHz	74MHz	530kHz	531/530kHz
4	1602kHz	87.5MHz	1700kHz	1602/1700kHz
5	558kHz	531kHz	560kHz	558/560kHz
6	1494kHz	1602kHz	1500kHz	1494/1500kHz
7	153kHz	558kHz	98MHz	87.5MHz
8	279kHz	1494kHz	87.5MHz	87.5MHz
9	198kHz	98MHz	87.5MHz	87.5MHz
10	98MHz	70.01MHz	87.5MHz	87.5MHz
11	87.5MHz	65.81MHz	87.5MHz	98MHz

Table 1

East Europe TUNER IF offset correction

1) Input a reference frequency 87.5MHz from the generator.
2) Proceed to the Tuner Test Mode
3) Hold TUNER button down for > 3 seconds
4) The set will self-calibrate automatically and display "OFS-xx" when calibration is successful, otherwise it will display "00E".

xx : offset value between -3 to +3

Note: This has to be done whenever the Eeprom, Microprocessor or the components in the oscillator circuitry are replaced.

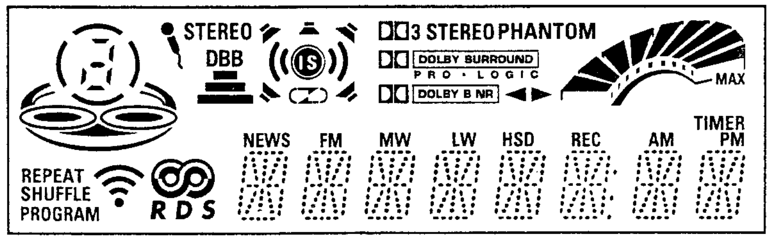
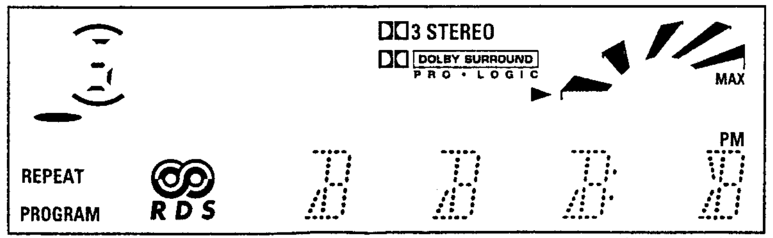

STEREO
DBB
DD3 STEREO PHANTOM
DD DOLBY SURROUND
PRO · LOGIC
DD DOLBY B NR
MAX
NEWS
FM
MW
LW
HSD
REC
AM
TIMER
PM
REPEAT
SHUFFLE
PROGRAM
RDS

Figure 1


DD3 STEREO
DD DOLBY SURROUND
PRO · LOGIC
MAX
PM
REPEAT
PROGRAM
RDS

note1 : CDC1, CDC3, CD, Tape1, Incredible Surround, Techno, Classic, ▶▶, ▶ and ▶|.

Figure 2

TEST	***Activated with***	***ACTION***
EEPROM TEST	▶▶ ■ to Exit	A test pattern will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test pattern correctly, otherwise "ERROR" will be displayed.
EEPROM FORMAT TEST	◀◀	Load default data. Display shows "NEW" for 1 second. ***Caution!*** ***All presets from the customer will be lost!!***
KEY TEST	▶| ■ to Exit	Key numbers according table 2 are shown on the display. (see page 3-4)
FAST CLOCK TEST	CLOCK/TIMER	The clock is switched to fast mode. "FAST" is displayed for 1 sec. Press CLOCK/TIMER again to reset the clock to normal. "NORMAL" displayed for 1 sec.
TEMPERATURE TEST	AUX ■ to Exit	Temperature in ^{0}C of the mains transformer as monitored by the NTC resistor is displayed.
VOLUME TEST	Rotary Volume Knob or Volume Up/Down	Display shows volume value for 2 seconds. Volume increases or decreases in steps of 1 until 0 (Min.) or 40 (Max.) is reached.
LEAVE SERVICE TESTPROGRAM	Disconnect mains cord	

Error code	Type	Error Description
E1000	W	Focus Error Triggered when the focus could not be found within a certain time when starting up the CD or when the focus is lost for a certain time during play.
E1001	W	Radial Error Triggered when the radial servo is off-track for a certain time during play.
E1002	W	Sledge In Error The sledge did not reach its inner position (inner-switch is still close) before approximately 6 Sec. have passed. Inner-switch or sledge motor problem.
E1003	W	Sledge Out Error The sledge did not come out of its inner position (inner-switch is still open) before approximately 250 mSec. have passed by. Inner-switch or sledge motor problem.
E1005	W	Jump-offtrack error Triggered in normal play when the jump destination could not be found within a certain time.
E1006	W	Subcode Error (no subcode within time) Triggered when a new subcode was missing for a certain time during play.
E1007	W	PLL Error The Phase Lock Loop could not lock within a certain time.
E1008	W	Turntable Motor Error Generated when the CD could not reached 75% of speed during startup within a certain time. Disc motor problem.
E1020	F	Focus Search Error The focus point has not been found within a certain time.
E1070	W	The carousel switch is not open within a certain time. This can happen when either the switch is defective and closed all the time, or when the carousel is blocked when located exactly at a disc position.
E1071	W	The carousel position switch did not close within a certain time. This can happen when the switch is defective and never closes electrically, or when the carousel is blocked in between two disc positions. The time-out is approximately 5 Sec.
E1079	W	The drawer could not enter the inside position is opening again. This can be caused because the drawer is blocked by something and cannot go fully inside, or the drawer switch is defective and does not close.
E2020*	F	Head Movement Error Deck 1 Generated if the head does not reach the desired position within a certain time.
E2021*	F	Head Movement Error Deck 2 Generated if the head does not reach the desired position within a certain time.

F = Fatal error & the set stop play function W = Warning
* For Logic set only.

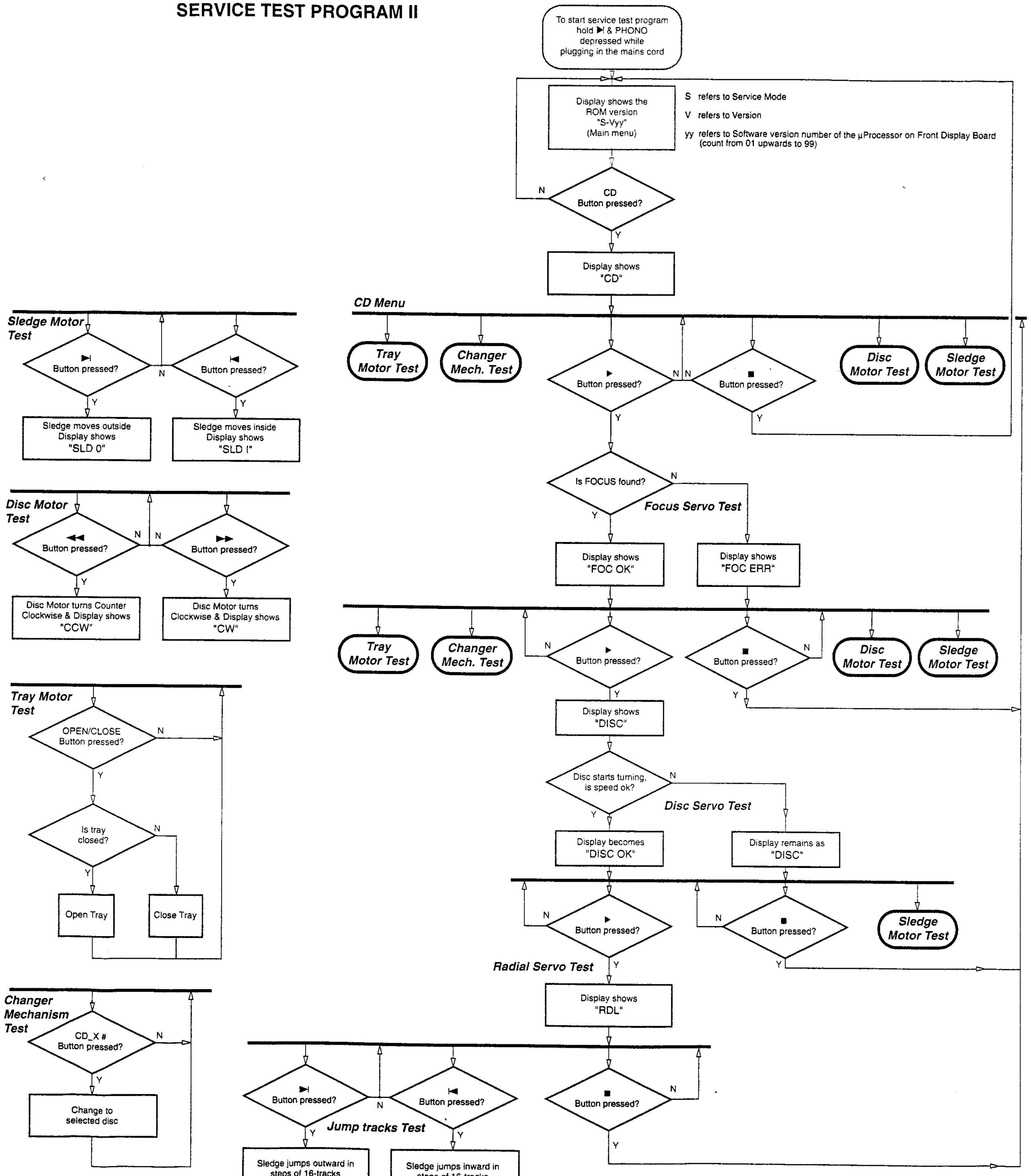
Table 3

Keys activated	Display shows	Keys activated	Display shows	Keys activated	Display shows
No Key pressed	--	STANDBY • ON	9	◀◀	19
Any Remote control key	RC	RDS *	10	▶▶	20
CD1	1	CLOCK / TIMER	11	■ (Exit Test)	
CD2	2	CD	12	▶II	22
CD3	3	TUNER	13	I◀	23
DISC CHANGE	4	TAPE1	14	▶I	24
OPEN / CLOSE	5	TAPE2	15	TAPE MODE	25
DSC	6	AUX / PHONO	16	TAPE DUBBING	26
INCREDIBLE SURROUND	7	PROGRAM	17		
DBB	8	RECORD	18		

* Not for all type/version.

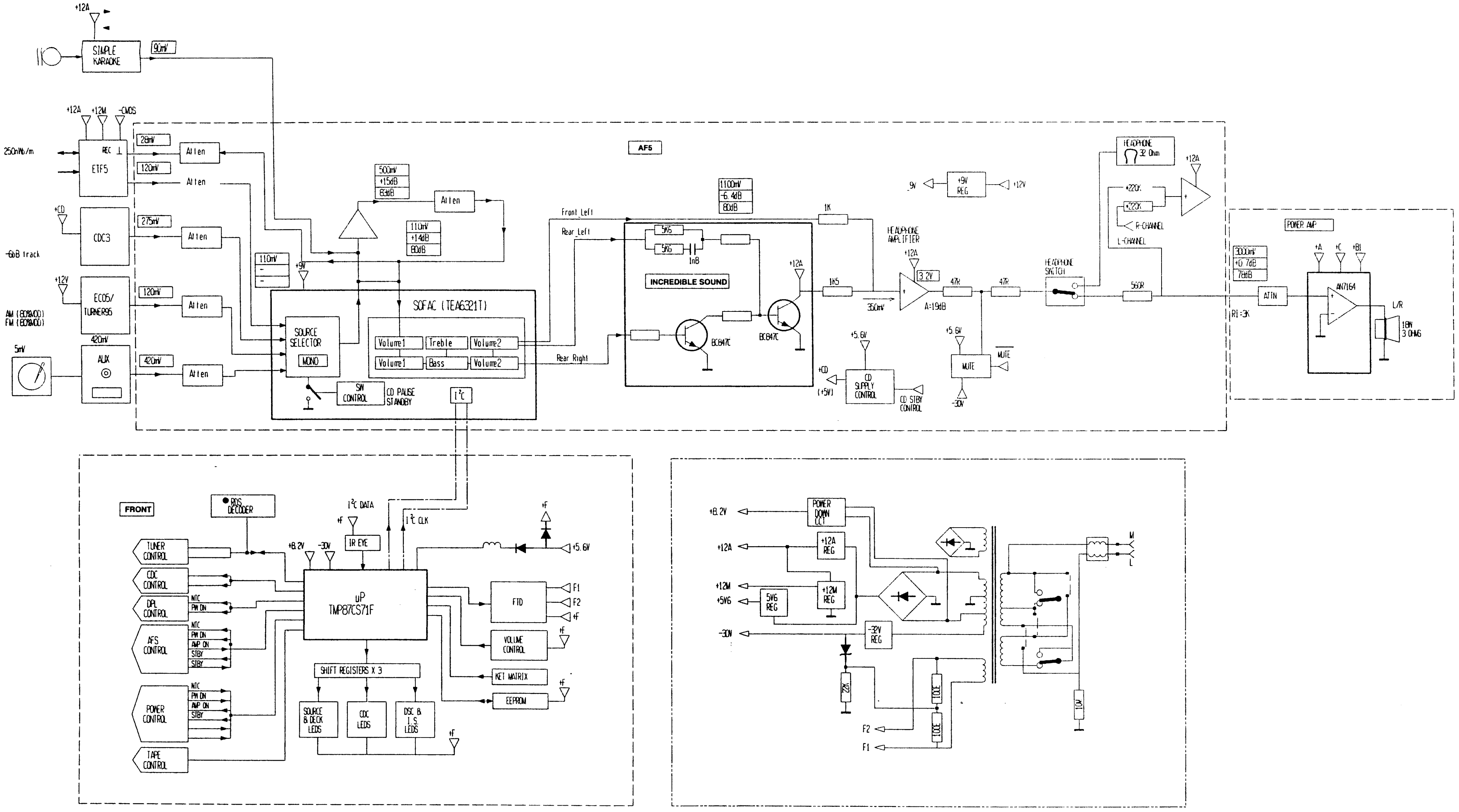
Table 2

SERVICE TEST PROGRAM II


To start service test program hold ▶I & PHONO depressed while plugging in the mains cord
Display shows the ROM version "S-Vyy" (Main menu)
S refers to Service Mode
V refers to Version
yy refers to Software version number of the µProcessor on Front Display Board (count from 01 upwards to 99)
CD Button pressed?
N
Y
Display shows "CD"
CD Menu
Tray Motor Test
Changer Mech. Test
▶ Button pressed?
N
N
■ Button pressed?
Y
Y
Disc Motor Test
Sledge Motor Test
Is FOCUS found?
N
Y
Focus Servo Test
Display shows "FOC OK"
Display shows "FOC ERR"
Tray Motor Test
Changer Mech. Test
N
▶ Button pressed?
■ Button pressed?
N
Y
Y
Disc Motor Test
Sledge Motor Test
Display shows "DISC"
Disc starts turning, is speed ok?
N
Y
Disc Servo Test
Display becomes "DISC OK"
Display remains as "DISC"
N
▶ Button pressed?
N
■ Button pressed?
Sledge Motor Test
Radial Servo Test
Y
Y
Display shows "RDL"
▶I Button pressed?
N
I◀ Button pressed?
Y
Jump tracks Test
Y
■ Button pressed?
N
Y
Sledge jumps outward in steps of 16-tracks
Sledge jumps inward in steps of 16-tracks
Sledge Motor Test
▶I Button pressed?
N
I◀ Button pressed?
Y
Y
Sledge moves outside Display shows "SLD 0"
Sledge moves inside Display shows "SLD I"
Disc Motor Test
◀◀ Button pressed?
N
N
▶▶ Button pressed?
Y
Y
Disc Motor turns Counter Clockwise & Display shows "CCW"
Disc Motor turns Clockwise & Display shows "CW"
Tray Motor Test
OPEN/CLOSE Button pressed?
N
Y
Is tray closed?
N
Y
Open Tray
Close Tray
Changer Mechanism Test
CD_X # Button pressed?
N
Y
Change to selected disc

CD_X refers to CD1, CD2 or CD3

SET BLOCK DIAGRAM


+12A
SIMPLE KARAOKE
90mV
+12A +12M -CMOS
250nWb/m
REC
ETF5
28mV
120mV
Atten
Atten
AF5
+CD
CDC3
275mV
Atten
-6dB track
+12V
EC05/ TUNER95
AM (80%MOD)
FM (80%MOD)
120mV
Atten
5mV
AUX
420mV
420mV
Atten
110mV
+9V
500mV
+15dB
63dB
Atten
110mV
+14dB
80dB
SOFAC (TEA6321T)
SOURCE SELECTOR
MONO
Volume1
Treble
Volume2
Volume1
Bass
Volume2
SW CONTROL
CD PAUSE STANDBY
I²C
Front Left
Rear Left
Rear Right
1100mV
-6.4dB
80dB
5K6
5K6
1n8
INCREDIBLE SOUND
BC847C
BC847C
+12A
1K
1K5
350mV
HEADPHONE AMPLIFIER
+12A
3.2V
A=19dB
47R
47R
9V
+9V REG
+12V
+5.6V
+CD
(+5V)
CD SUPPLY CONTROL
CD STBY CONTROL
-30V
+5.6V
MUTE
MUTE
HEADPHONE 32 Ohm
+12A
+220K
+220K
R-CHANNEL
L-CHANNEL
HEADPHONE SWITCH
560R
POWER AMP
3000mV
+0.7dB
78dB
Ri=3K
ATTN
+A +C +B1
AN7164
L/R
16W 3 OHMS
FRONT
RDS DECODER
I²C DATA
+F
I²C CLK
+F
+5.6V
IR EYE
+8.2V
-30V
TUNER CONTROL
CDC CONTROL
DPL CONTROL
NTC
PW ON
AFS CONTROL
NTC
PW ON
AMP ON
STBY
STBY
POWER CONTROL
NTC
PW ON
AMP ON
STBY
TAPE CONTROL
uP TMP87CS71F
FTD
F1
F2
+F
VOLUME CONTROL
+F
KEY MATRIX
+F
EEPROM
SHIFT REGISTERS X 3
SOURCE & DECK LEDS
CDC LEDS
DSC & I.S LEDS
+F
+8.2V
POWER DOWN CCT
+12A
+12A REG
+12M
+5V6
5V6 REG
+12M REG
-30V
-32V REG
22K
100E
100E
10K
F2
F1
M
L

LEGEND :

SK : SIMPLE KARAOKE

NK : NON KARAOKE LQ : LINE-OUT

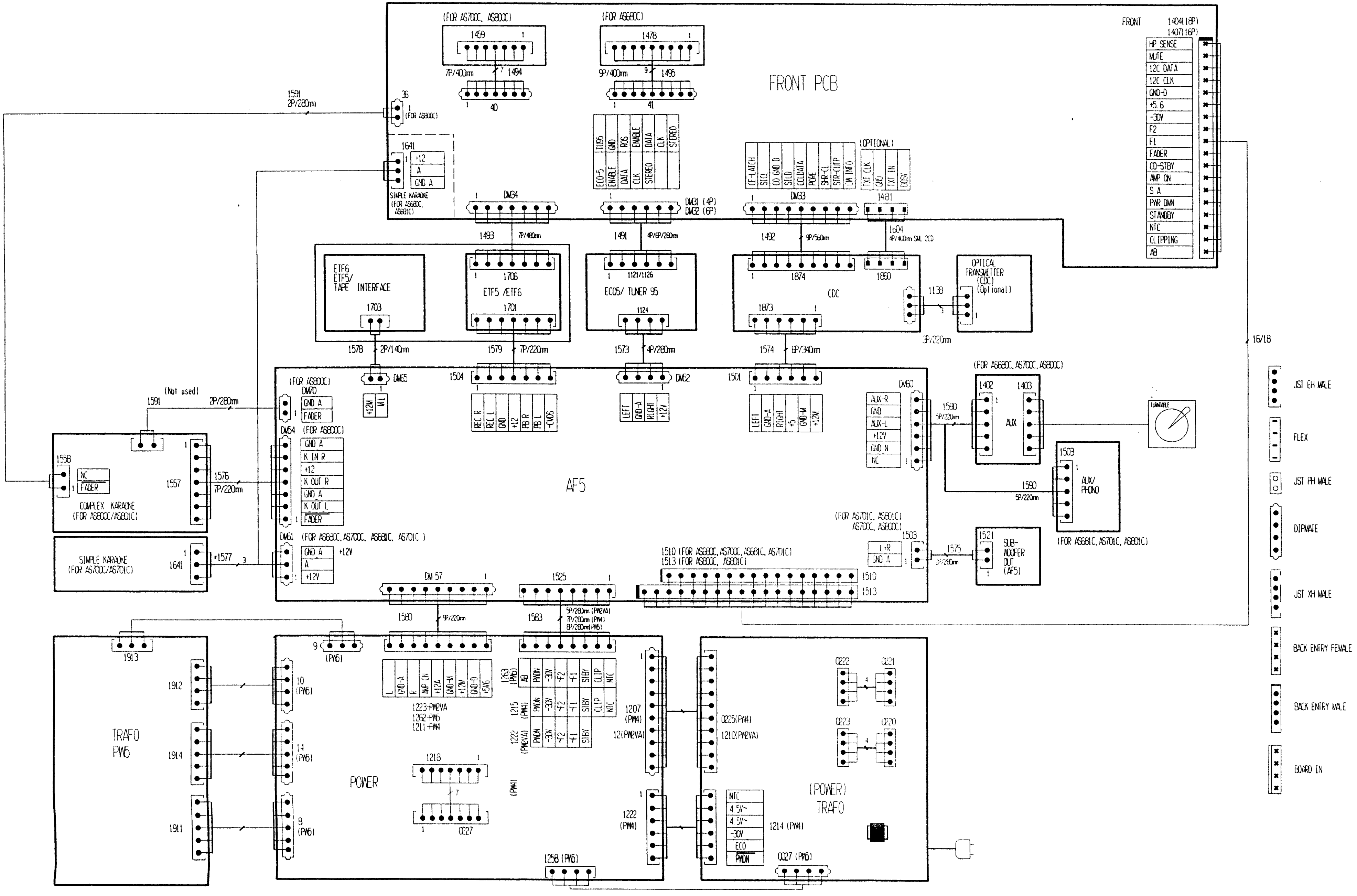
DP : DOLBY PROLOGIC

mV	AC SIGNAL LEVEL
dB	HEADROOM
dB	S/N RADIO

→ SIGNAL FLOW (MAIN & CONTROL)

⧗ : MUTE CENTER & SURROUND WHEN PLUG IN HEADPHONE

SET WIRING DIAGRAM

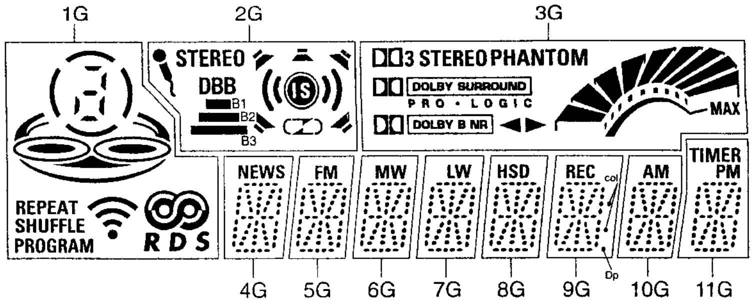

FRONT PCB
(FOR AS700C, AS800C)
1459
7P/400mm
1494
40
(FOR AS680C)
1478
9P/400mm
1495
41
TU95
GND
RDS
ENABLE
DATA
CLK
STEREO
ECO-5
ENABLE
DATA
CLK
STEREO
DM34
DM31 (4P)
DM32 (6P)
CE-LATCH
SICL
CD GND D
SILD
CLDATA
PORE
SHR-CL
STR-CUTP
CW INFO
(OPTIONAL)
TXT CLK
GND
TXT IN
DGSY
DM33
1481
1591
2P/280mm
36
(FOR AS800C)
1641
+12
A
GND A
SIMPLE KARAOKE
(FOR AS680C, AS801C)
FRONT
1404(16P)
1407(16P)
HP SENSE
MUTE
I2C DATA
I2C CLK
GND-D
+5.6
-30V
F2
F1
FADER
CD-STBY
AMP ON
S A
PWR DWN
STANDBY
NTC
CLIPPING
AB
1493
7P/480mm
1491
4P/6P/280mm
1492
9P/560mm
1604
4P/400mm SML 2CD
ETF6
ETF5/
TAPE INTERFACE
1703
1706
ETF5 /ETF6
1701
1121/1126
EC05/ TUNER 95
1124
1874
1860
CDC
1873
1138
3
OPTICAL
TRANSMITTER
(CDC)
(Optional)
3P/220mm
16/18
1578
2P/140mm
1579
7P/220mm
1573
4P/280mm
1574
6P/340mm
(FOR AS800C)
DM70
GND A
FADER
DM65
+12V
M1
1504
REC R
REC L
GND
+12
PB R
PB L
+CMOS
DM62
LEFT
GND-A
RIGHT
+12V
1501
LEFT
GND-A
RIGHT
+5
GND-M
+12V
DM60
AUX-R
GND
AUX-L
+12V
GND N
NC
(FOR AS680C, AS700C, AS800C)
1402
1403
AUX
1590
5P/220mm
TURNTABLE
1503
AUX/
PHONO
5P/220mm
(FOR AS681C, AS701C, AS801C)
(Not used)
1591
2P/280mm
DM64
(FOR AS800C)
GND A
K IN R
+12
K OUT R
GND A
K OUT L
FADER
1558
NC
FADER
COMPLEX KARAOKE
(FOR AS800C/AS801C)
1557
1576
7P/220mm
AF5
DM61
(FOR AS680C, AS700C, AS681C, AS701C)
GND A
A
+12V
SIMPLE KARAOKE
(FOR AS700C/AS701C)
1641
1577
(FOR AS701C, AS801C)
AS700C, AS800C)
1503
L+R
GND A
1575
2P/280mm
1521
SUB-
WOOFER
OUT
(AF5)
1510 (FOR AS680C, AS700C, AS681C, AS701C)
1513 (FOR AS800C, AS801C)
1510
1513
DM 57
1525
1580
9P/220mm
1583
5P/280mm (PW2VA)
7P/280mm (PW4)
8P/280mm (PW6)
1913
1912
1914
1911
TRAFO
PW6
9
(PW6)
10
(PW6)
14
(PW6)
8
(PW6)
L
GND-A
R
AMP ON
+12A
GND-M
+12V
GND-D
+5V6
1223-PW2VA
1262-PW6
1211-PW4
1263 (PW6)
AB
PWDN
-30V
+F2
+F1
STBY
CLIP
NTC
1215 (PW4)
PWDN
-30V
+F2
+F1
STBY
CLIP
NTC
1222 (PW2VA)
PWDN
-30V
+F2
+F1
STBY
1218
0027
POWER
(PW4)
1207
(PW4)
121(PW2VA)
1222
(PW4)
1258 (PW6)
0225(PW4)
121C(PW2VA)
0222
0221
0223
0220
NTC
4.5V~
4.5V~
-30V
ECO
PWDN
1214 (PW4)
(POWER)
TRAFO
0027 (PW6)
JST EH MALE
FLEX
JST PH MALE
DIPMATE
JST XH MALE
BACK ENTRY FEMALE
BACK ENTRY MALE
BOARD IN

FRONT BOARD

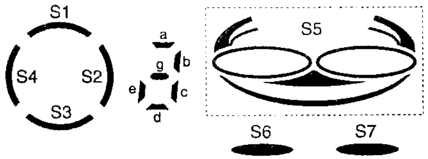
TABLE OF CONTENTS

LCD pin connection 6-1
Component layout 6-2
Chip layout 6-3
Circuit diagram 6-4
Variation table 6-5
Key-CDC part - Layouts & Circuit diagram 6-5
Karaoke part - Layouts & Circuit diagram 6-6
Electrical parts list 6-6

FTD DISPLAY PIN CONNECTIONS

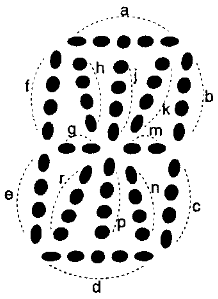


1G
2G
3G
STEREO
DBB
B1
B2
B3
IS
3 STEREO PHANTOM
DOLBY SURROUND
PRO · LOGIC
DOLBY B NR
MAX
TIMER
PM
REPEAT
SHUFFLE
PROGRAM
RDS
NEWS
FM
MW
LW
HSD
REC
col
Dp
AM
4G
5G
6G
7G
8G
9G
10G
11G



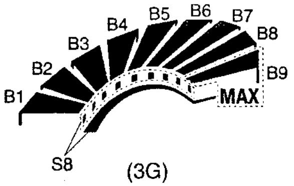
S1
S2
S3
S4
a
b
c
d
e
g
S5
S6
S7

(1G)



a
b
c
d
e
f
g
h
j
k
m
n
p
r

(4G-11G)



B1
B2
B3
B4
B5
B6
B7
B8
B9
MAX
S8

(3G)

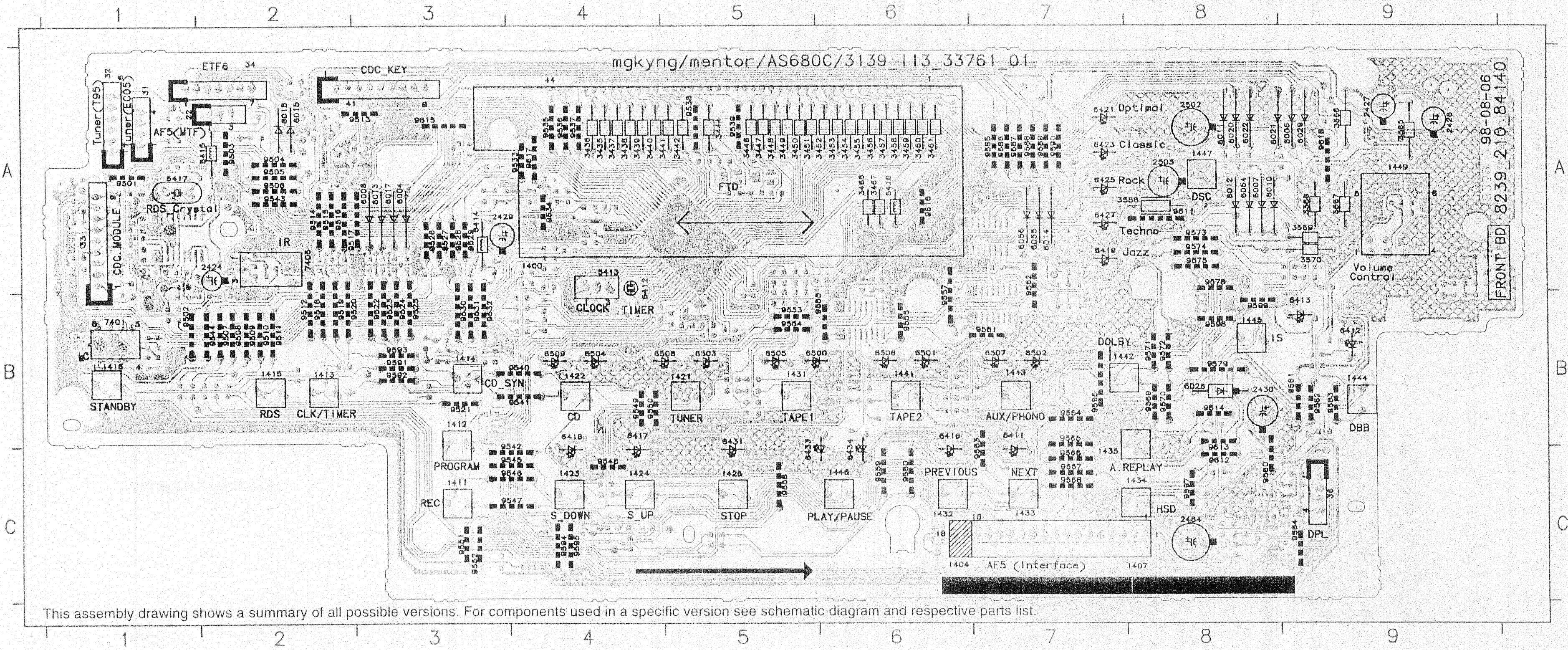
	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G
P1	S1	STEREO	DD3 STEREO	a	a	a	a	a	a	a	a
P2	S2	DBB	PHANTOM	h	h	h	h	h	h	h	h
P3	S3	B1	DD DOLBY SURROUND PRO · LOGIC	j , p	j , p	j , p	j , p	j , p	j , p	j , p	j , p
P4	S4	B2	DD DOLBY B NR	k	k	k	k	k	k	k	k
P5	a , d , g	B3	▶	b	b	b	b	b	b	b	b
P6	b	◥	◀	f	f	f	f	f	f	f	f
P7	c	◤	B1	m	m	m	m	m	m	m	m
P8	e	▲	B2	g	g	g	g	g	g	g	g
P9	REPEAT	IS	B3	c	c	c	c	c	c	c	c
P10	SHUFFLE	(( ))	B4	e	e	e	e	e	e	e	e
P11	PROGRAM	◣ ◢	B5	r	r	r	r	r	r	r	r
P12	S5	Σ	B6	n	n	n	n	n	n	n	n
P13	S6	)	B7	d	d	d	d	d	d	d	d
P14	S7	(	B8	NEWS	FM	MW	LW	HSD	REC	AM	TIMER
P15	RDS	🎤	B9	-	-	-	-	-	col	-	PM
P16	📶	○	S8	-	-	-	-	-	Dp	-	-

FRONT BOARD - COMPONENT VIEW

22	A1	1411	C3	1425	C5	1445	B8	2502	A8	3444	A5	3455	A6	3566	A9
31	A1	1412	B3	1431	B5	1446	C6	2503	A8	3446	A5	3456	A6	3567	A9
32	A1	1413	B2	1432	C6	1447	A8	3435	A4	3447	A5	3457	A6	3568	A9
33	A1	1414	B3	1433	C7	1449	A9	3436	A4	3448	A5	3458	A6	3569	A9
34	A2	1415	B2	1434	C8	2424	A2	3437	A4	3449	A5	3459	A8	3570	A9
36	C9	1416	B1	1435	C7	2427	A9	3438	A4	3450	A5	3460	A6	3588	A8
41	A2	1421	B5	1441	B6	2428	A9	3439	A4	3451	A5	3461	A6	5412	A4
1400	A4	1422	B4	1442	B7	2429	A3	3440	A4	3452	A6	3466	A6	5413	A4
1404	C6	1423	C4	1443	B7	2430	B8	3441	A5	3453	A6	3467	A8	5414	A3
1407	C8	1424	C4	1444	B9	2454	C8	3442	A5	3454	A6	3565	A9	5415	A2

5416	A6	6014	A7	6055	A7	6423	A7	6504	B4	9503	A2	9513	A3	9523	B3
5417	A1	6015	A2	6056	A7	6425	A7	6505	B5	9504	A2	9514	A2	9524	B3
6004	A3	6017	A3	6411	B7	6427	A7	6506	B6	9505	A2	9515	A2	9525	B3
6006	A9	6018	A2	6412	B9	6431	B5	6507	B7	9506	A2	9516	A2	9526	A3
6007	A8	6020	A8	6413	B9	6433	C5	6508	B5	9507	B2	9517	A2	9527	A3
6008	A3	6021	A8	6416	B6	6434	C6	6509	B4	9508	B2	9518	B2	9528	A3
6010	A8	6022	A8	6417	B4	6500	B5	7401	B1	9509	B2	9519	B2	9529	A3
6011	A8	6028	B8	6418	B4	6501	B6	7405	A2	9510	B2	9520	B2	9530	B3
6012	A8	6029	A9	6419	A7	6502	B7	9501	A1	9511	B2	9521	B3	9531	B3
6013	A3	6054	A8	6421	A7	6503	B5	9502	B1	9512	B2	9522	B3	9532	B3

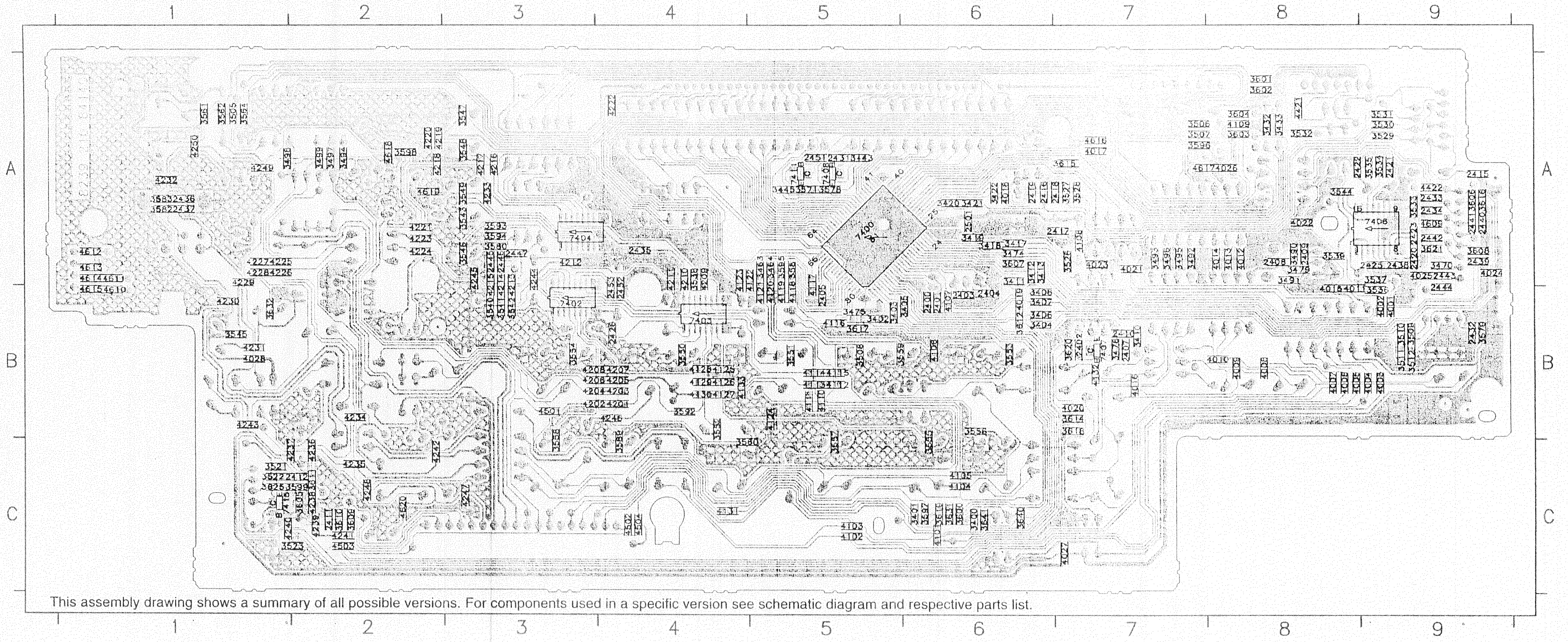
9533	A4	9543	A2	9553	B5	9563	C7	9573	A8	9585	A7	9595	C4	9616	A6
9534	A4	9544	B2	9554	B5	9564	B7	9574	A8	9586	A7	9596	B7	9617	A4
9535	A4	9545	C4	9555	B6	9565	B7	9575	A8	9587	A7	9597	C8	9618	A9
9536	A4	9546	C4	9556	B6	9566	C7	9578	A8	9588	A7	9598	B8		
9537	A4	9547	C4	9557	B6	9567	C7	9579	B8	9589	A7	9599	B8		
9538	A5	9548	C4	9558	C5	9568	C7	9580	C8	9590	A7	9611	A8		
9539	A5	9549	B4	9559	C6	9569	B8	9581	B9	9591	B3	9612	C8		
9540	B4	9550	B4	9560	C6	9570	B8	9582	B9	9592	B3	9613	C8		
9541	B4	9551	C3	9561	B7	9571	B8	9583	B9	9593	B3	9614	B8		
9542	C4	9552	C3	9562	A7	9572	B8	9584	C9	9594	C4	9615	A3		


1
2
3
4
5
6
7
8
9
A
B
C
mgkyng/mentor/AS680C/3139_113_33761_01
ETF6
CDC_KEY
Tuner(T95)
Tuner(EC05)
AF5(MTF)
RDS_Crystal
CDC_MODULE
IR
FTD
CLOCK
TIMER
Optimal
Classic
Rock
DSC
Techno
Jazz
Volume
Control
98-08-06
8239_210_84140
FRONT BD
STANDBY
RDS
CLK/TIMER
CD_SYN
CD
TUNER
TAPE1
TAPE2
AUX/PHONO
DOLBY
IS
DBB
PROGRAM
REC
S_DOWN
S_UP
STOP
PLAY/PAUSE
PREVIOUS
NEXT
A.REPLAY
HSD
DPL
AF5 (Interface)

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

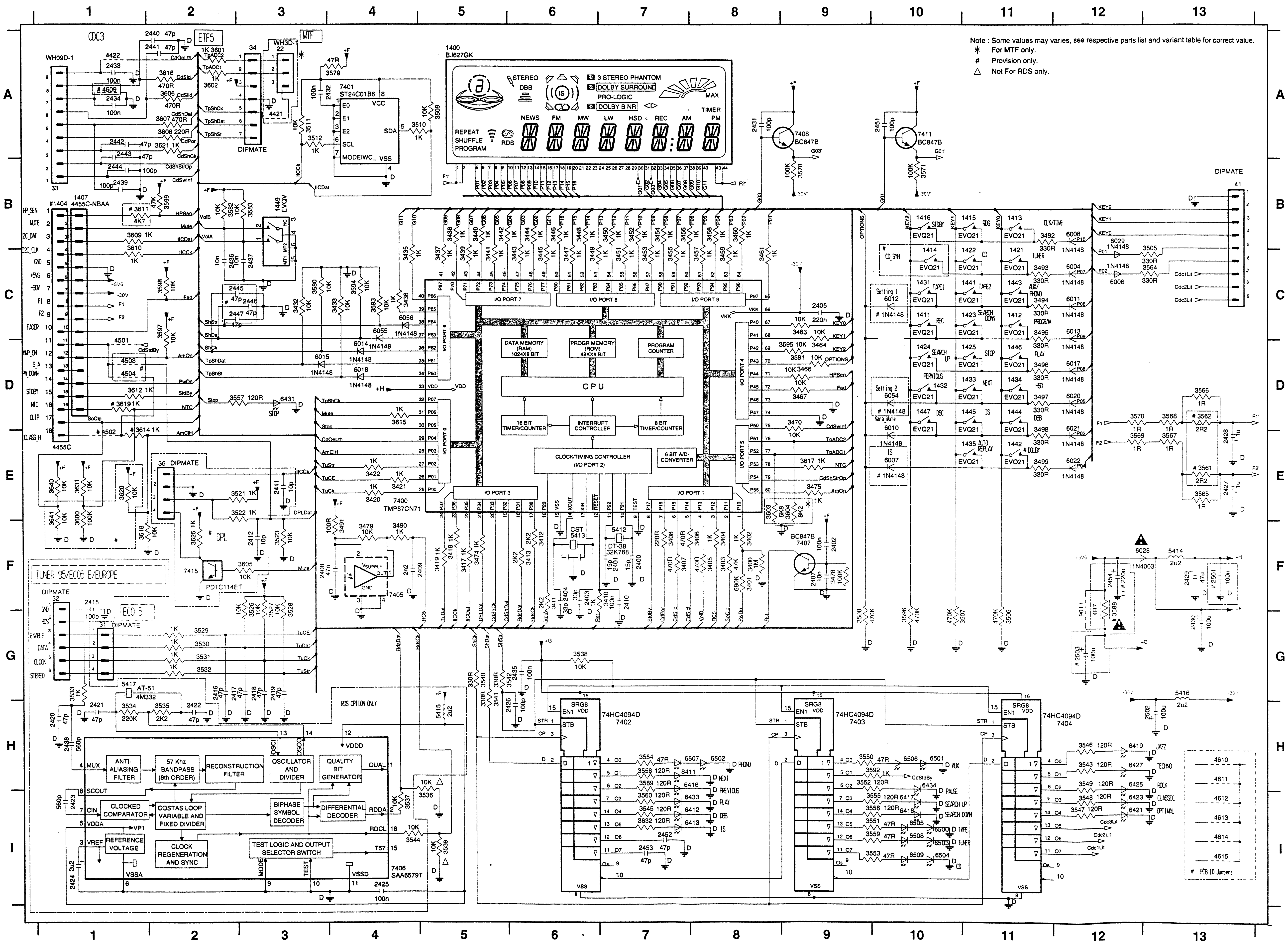
FRONT BOARD - COPPER SIDE VIEW

2400	B6
2401	B6
2402	B7
2403	B6
2404	B6
2405	B5
2407	B7
2408	A8
2409	A8
2410	B7
2411	C2
2412	C2
2415	A9
2416	A6
2417	A7
2418	A7
2419	A6
2420	A9
2421	A9
2422	A8
2423	A9
2425	A9
2426	B4
2431	A5
2432	B9
2433	A9
2434	A9
2435	A4
2436	A1
2437	A1
2438	A9
2439	A9
2440	A9
2441	A9
2442	A9
2443	A9
2444	B9
2445	A3
2446	A3
2447	A3
2451	A5
2452	B4
2453	B4
2501	A6
3400	C6
3401	C6
3402	B5
3403	B5
3404	B6
3405	B6
3406	B6
3407	B6
3408	B6
3410	B7
3411	A6
3412	A6
3413	A6
3417	A6
3418	A6
3419	A6
3420	A6
3421	A6
3422	A6
3432	A8
3433	A8
3443	A5
3445	A5
3463	A5
3464	A5
3470	A9
3474	A6
3475	B5
3478	B7
3479	A8
3490	A8
3491	A8
3492	A7
3493	A7
3494	A2
3495	A7
3496	A7
3497	A2
3498	A1
3499	A2
3505	A1
3506	A7
3507	A7
3508	B5
3509	B9
3510	B9
3511	B9
3512	B9
3521	C1
3522	C1
3523	C2
3526	A7
3527	A7
3528	A7
3529	A9
3530	A9
3531	A9
3532	A8
3533	A9
3534	A9
3535	A9
3536	B9
3537	A9
3538	A4
3539	A8
3540	B3
3541	B3
3542	B3
3543	A3
3544	A8
3545	B1
3546	A3
3547	A3
3548	A3
3549	A3
3550	B4
3551	B5
3552	B4
3553	B6
3554	B3
3555	C6
3556	B6
3557	C5
3558	C3
3559	B5
3560	C4
3561	A1
3562	A1
3564	A1
3571	A5
3578	A5
3579	B9
3580	A3
3581	A5
3582	A1
3583	A1
3589	C4
3592	B4
3593	A3
3594	A3
3595	A5
3596	A7
3597	C6
3598	A2
3599	C2
3600	C6
3601	A8
3602	A8
3603	A8
3604	A8
3605	C2
3606	A9
3607	A6
3608	A9
3609	C2
3610	C2
3611	C2
3612	B6
3614	B7
3615	A7
3616	A9
3617	B5
3618	B7
3619	C6
3620	B7
3621	A9
3625	C1
3631	C6
3632	B1
3640	C6
3641	C6
4001	B9
4002	B9
4003	B9
4004	B9
4005	B8
4006	B8
4007	B8
4008	B8
4009	B8
4010	B8
4011	B8
4012	A8
4013	A8
4014	A8
4015	B8
4016	B7
4017	A7
4018	A6
4019	B6
4020	B7
4021	A7
4022	A8
4023	A7
4024	A9
4025	A9
4026	A8
4027	C7
4028	B1
4101	C6
4102	C5
4103	C5
4104	C6
4105	C6
4106	B6
4107	B6
4108	A7
4109	A8
4110	B5
4111	B5
4112	B5
4113	B5
4114	B5
4115	B5
4116	B5
4117	A5
4118	B5
4119	B5
4120	B5
4121	B5
4122	A5
4123	A4
4124	B5
4125	B4
4126	B4
4127	B4
4128	B4
4129	B4
4130	B4
4131	C4
4132	B7
4133	B4
4201	B4
4202	B3
4203	B4
4204	B3
4205	B4
4206	B3
4207	B4
4208	B3
4209	A4
4210	A4
4211	A4
4212	A3
4213	B3
4214	B3
4215	B3
4216	A3
4217	A3
4218	A2
4219	A2
4220	A2
4221	A2
4222	A4
4223	A2
4224	A2
4225	A1
4226	A1
4227	A1
4228	A1
4229	A1
4230	B1
4231	B1
4232	A1
4233	A3
4234	B2
4235	C2
4236	C2
4237	C1
4238	C2
4239	C2
4240	C1
4241	C2
4242	C2
4243	B1
4244	A3
4245	A3
4246	B4
4247	C3
4248	C2
4249	A1
4250	A1
4421	A8
4422	A9
4501	B3
4502	C4
4503	C2
4504	C4
4609	A9
4610	B1
4611	A1
4612	A1
4613	A1
4614	A1
4615	B1
4616	A7
4617	A7
4618	A2
4619	A2
4620	C2
7400	A5
7402	B3
7403	B4
7404	A3
7406	A9
7407	B7
7408	A5
7411	A5
7415	C1



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

FRONT BOARD - CIRCUIT DIAGRAM


1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
I
CDC3
ETF5
MTF
WH09D-1
WH3D-1
DIPMATE
1400
BJ627GK
STEREO
DBB
3 STEREO PHANTOM
DOLBY SURROUND
PRO-LOGIC
DOLBY B NR
MAX
TIMER
NEWS
FM
MW
LW
HSD
REC
AM
PM
REPEAT
SHUFFLE
PROGRAM
RDS
7401
ST24C01B6
MODE/WC_
VSS
VCC
SDA
SCL
7408
BC847B
7411
BC847B
1404
1407
4455C-NBAA
4455C
HP_SEN
MUTE
I2C_DAT
I2C_CLK
GND
+5V6
-30V
F1
F2
FADER
AMP_ON
S_A
PWDOWN
STDBY
NTC
CLIP
CLASS_H
1449
EVQV
7400
TMP87CN71
I/O PORT 7
I/O PORT 8
I/O PORT 9
I/O PORT 6
I/O PORT 4
I/O PORT 0
I/O PORT 5
I/O PORT 3
I/O PORT 1
DATA MEMORY (RAM) 1024X8 BIT
PROGR MEMORY (ROM) 48KX8 BIT
PROGRAM COUNTER
CPU
16 BIT TIMER/COUNTER
INTERRUPT CONTROLLER
8 BIT TIMER/COUNTER
CLOCK/TIMING CONTROLLER (I/O PORT 2)
8 BIT A/D-CONVERTER
CST 5413
DT-38 32K768
5412
7407
BC847B
7415
PDTC114ET
7405
DPL
TUNER 95/EC05 E/EUROPE
ECO 5
5417 AT-51 4M332
RDS OPTION ONLY
7406
SAA6579T
MUX
ANTI-ALIASING FILTER
57 Khz BANDPASS (8th ORDER)
RECONSTRUCTION FILTER
OSCILLATOR AND DIVIDER
QUALITY BIT GENERATOR
SCOUT
CIN
CLOCKED COMPARATOR
COSTAS LOOP VARIABLE AND FIXED DIVIDER
BIPHASE SYMBOL DECODER
DIFFERENTIAL DECODER
VDDA
VP1
VREF
REFERENCE VOLTAGE
CLOCK REGENERATION AND SYNC
TEST LOGIC AND OUTPUT SELECTOR SWITCH
VSSA
VSSD
VDDD
QUAL
RDDA
RDCL
T57
MODE
TEST
7402
7403
7404
74HC4094D
SRG8
EN1
STB
PHONO
NEXT
PREVIOUS
PLAY
DBB
IS
AUX
CdStdBy
PAUSE
SEARCH UP
SEARCH DOWN
TAPE
TUNER
CD
JAZZ
TECHNO
ROCK
CLASSIC
OPTIMAL
Cdc3Lit
Cdc2Lit
Cdc1Lit
1416 STDBY
1415 RDS
1413 CLK/TIME
1414 CD_SYN
1422 CD
1421 TUNER
1431 TAPE1
1441 TAPE2
1443 AUX/PHONO
1411 REC
1423 SEARCH DOWN
1412 PROGRAM
1424 SEARCH UP
1425 STOP
1446 PLAY
1432 PREVIOUS
1433 NEXT
1434 HSD
1447 DSC
1445 IS
1444 DBB
1435 AUTO REPLAY
1442 DOLBY
EVQ21
Setting 1
Setting 2
Kara Mute
KEY0
KEY1
KEY2
P01
P02
DIPMATE
41
4610
4611
4612
4613
4614
4615
PCB ID Jumpers
6028
1N4003
5414
5416
+5V6
+H
+G
-F
-30V

Note : Some values may varies, see respective parts list and variant table for correct value.

✱ For MTF only.

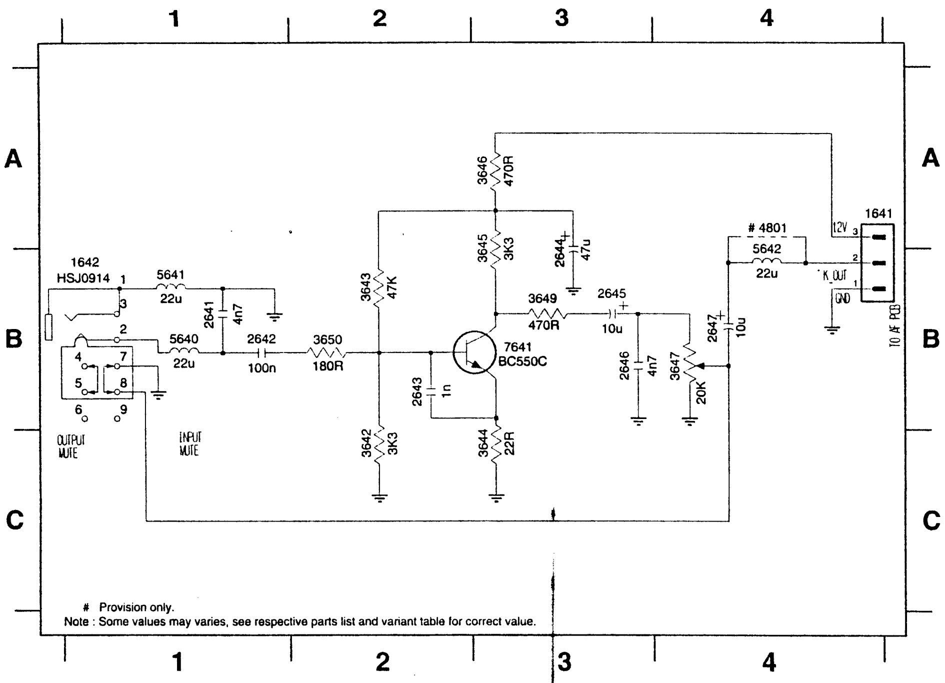
Provision only.

△ Not For RDS only.

22	A3
31	G1
32	F1
33	B1
34	A3
36	E2
41	B13
1400	A5
1404	B1
1407	B1
1411	C10
1412	C11
1413	B11
1414	C10
1415	B11
1416	B10
1421	C11
1422	C11
1423	C11
1424	D10
1425	D11
1431	C10
1432	D10
1433	D11
1434	D11
1435	E11
1441	C11
1442	E11
1443	C11
1444	D11
1445	D11
1446	D11
1447	D10
1449	B3
2400	F7
2401	F7
2402	F9
2403	F6
2404	F6
2405	C9
2407	F9
2408	F3
2409	F4
2410	F7
2411	E3
2412	F3
2415	F1
2416	G2
2417	G2
2418	G3
2419	G3
2420	H1
2421	H1
2422	H2
2423	I1
2424	I1
2425	I4
2426	H6
2427	E13
2428	E13
2429	F13
2430	G13
2431	A8
2432	A3
2433	A1
2434	A1
2435	G6
2436	C2
2437	C3
2438	H1
2439	B1
2440	A2
2441	A2
2442	A1
2443	A1
2444	B1
2445	C3
2446	C3
2447	C3
2451	A10
2452	I7
2453	I7
2454	F12
2501	F13
2502	H13
2503	G12
3400	F8
3401	F8
3402	F8
3403	F8
3404	F8
3405	F8
3406	F8
3407	F7
3408	F7
3410	F7
3411	F6
3412	F6
3413	F6
3417	F5
3418	F5
3419	F5
3420	E4
3421	E4
3422	E4
3432	C3
3433	C4
3435	C4
3436	C4
3437	C5
3438	B5
3439	C5
3440	B5
3441	C5
3442	B5
3443	C6
3444	B6
3445	C6
3446	B6
3447	C6
3448	B6
3449	C6
3450	B7
3451	C7
3452	B7
3453	C7
3454	B7
3455	C7
3456	B7
3457	C8
3458	B8
3459	C8
3460	B8
3461	C8
3463	C9
3464	D9
3466	D9
3467	D9
3470	D9
3474	F5
3475	E9
3478	F9
3479	F4
3490	F4
3491	F4
3492	B11
3493	C11
3494	C11
3495	C11
3496	D11
3497	D11
3498	E11
3499	E11
3505	C13
3506	G11
3507	G10
3508	G9
3509	A5
3510	A5
3511	A3
3512	A3
3521	E3
3522	E3
3523	F3
3526	F3
3527	F3
3528	F3
3529	G2
3530	G2
3531	G2
3532	G2
3533	G1
3534	H1
3535	H2
3536	I5
3537	I4
3538	G6
3539	I5
3540	G5
3541	G5
3542	G5
3543	H12
3544	I4
3545	I7
3546	H12
3547	I12
3548	I12
3549	H12
3550	H9
3551	I10
3552	H9
3553	I10
3554	H7
3555	I10
3556	I10
3557	D2
3558	H7
3559	I10
3560	I7
3561	E13
3562	D13
3564	C13
3565	E13
3566	D13
3567	E13
3568	D13
3569	E12
3570	D12
3571	B10
3578	B9
3579	A4
3580	C3
3581	D9
3582	B2
3583	B3
3588	F12
3589	H7
3592	H10
3593	C4
3594	C4
3595	D9
3596	G10
3597	C2
3598	C2
3599	B2
3600	E1
3601	A2
3602	A2
3603	E8
3604	E9
3605	F3
3606	A2
3607	A2
3608	A2
3609	B1
3610	C1
3611	B1
3612	D1
3614	E1
3615	D4
3616	A2
3617	E9
3618	F1
3619	D1
3620	E1
3621	A2
3625	F2
3631	E1
3632	I7
3640	E1
3641	E1
4421	A3
4422	A1
4501	D1
4502	E1
4503	D1
4504	D1
4609	A1
4610	H13
4611	H13
4612	I13
4613	I13
4614	I13
4615	I13
5412	F7
5413	F6
5414	F13
5415	H5
5416	G13
5417	G1
6004	C12
6006	C12
6007	E10
6008	B12
6010	E10
6011	C12
6012	C10
6013	C12
6014	D4
6015	D3
6017	D12
6018	D4
6020	D12
6021	E12
6022	E12
6028	F12
6029	B12
6054	D10
6055	C4
6056	C4
6411	H7
6412	I8
6413	I8
6416	H8
6417	I10
6418	I10
6419	H12
6421	I12
6423	I12
6425	H12
6427	H12
6431	D3
6433	I8
6434	H10
6500	I10
6501	H10
6502	H8
6503	I10
6504	I10
6505	I10
6506	H10
6507	H8
6508	I10
6509	I10
7400	E4
7401	A4
7402	H6
7403	H9
7404	H11
7405	F4
7406	I4
7407	F9
7408	A9
7411	A10
7415	F2
9611	F12

KARAOKE PART - CIRCUIT DIAGRAM

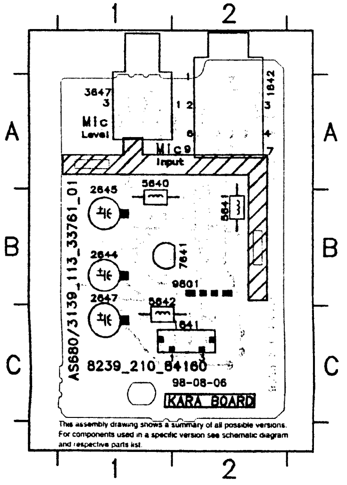
1641 A4 2641 B1 2643 B2 2645 B3 2647 B4 3643 B2 3645 B3 3647 B4 3650 B2 5640 B1 5642 B4
1642 B1 2642 B1 2644 B3 2646 B3 3642 C2 3644 C3 3646 A3 3649 B3 4801 A4 5641 B1 7641 B3


1
2
3
4
A
B
C
1642
HSJ0914
5641
22u
2641
4n7
5640
22u
2642
100n
3650
180R
3643
47K
3646
470R
3645
3K3
2644
47u
3649
470R
2645
10u
7641
BC550C
2643
1n
3642
3K3
3644
22R
2646
4n7
3647
20K
2647
10u
# 4801
5642
22u
1641
12V
K_OUT
GND
TO A' PCB
OUTPUT MUTE
INPUT MUTE

Provision only.
Note : Some values may varies, see respective parts list and variant table for correct value.

KARAOKE PART - COMPONENT VIEW

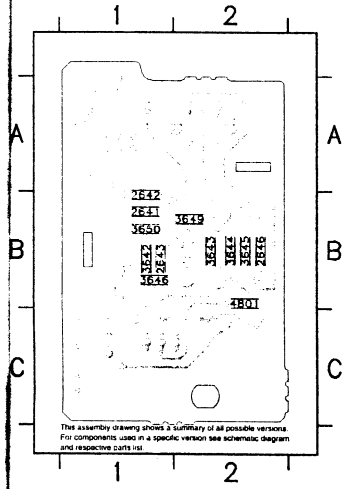
1641 C2 2645 B1 5640 A1 7641 B2
1642 A2 2647 B1 5641 B2 9801 B2
2644 B1 3647 A1 5642 B1


1
2
A
B
C
3647
Mic Level
Mic9 Input
1642
2645
5640
5641
2644
7841
9801
2647
5642
1641
AS680/3139_113_33761_01
8239_210_84160
98-08-06
KARA BOARD

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

KARAOKE PART - COPPER SIDE VIEW

2641 B1 2646 B2 3644 B2 3649 B2
2642 B1 3642 B1 3645 B2 3650 B1
2643 B1 3643 B2 3646 B1 4801 B2


1
2
A
B
C
2642
2641
3650
3649
3642
2643
3646
3643
3644
3645
2646
4801

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

ELECTRICAL PARTS LIST - FRONT BOARD

MISCELLANEOUS

1400	4822 135 00259	FTD Display
1407	4822 267 51238	Connector 16 pins
1411	4822 276 13114	Tact Switch
1412	4822 276 13114	Tact Switch
1413	4822 276 13114	Tact Switch
1415	4822 276 13114	Tact Switch
1416	4822 276 13114	Tact Switch
1421	4822 276 13114	Tact Switch
1422	4822 276 13114	Tact Switch
1423	4822 276 13114	Tact Switch
1424	4822 276 13114	Tact Switch
1425	4822 276 13114	Tact Switch
1431	4822 276 13114	Tact Switch
1432	4822 276 13114	Tact Switch
1433	4822 276 13114	Tact Switch
1434	4822 276 13114	Tact Switch
1435	4822 276 13114	Tact Switch
1441	4822 276 13114	Tact Switch
1443	4822 276 13114	Tact Switch
1444	4822 276 13114	Tact Switch
1445	4822 276 13114	Tact Switch
1446	4822 276 13114	Tact Switch
1447	4822 276 13114	Tact Switch
1449	4822 101 21261	Rotary Encoder 24P
1453	4822 276 13114	Tact Switch
1454	4822 276 13114	Tact Switch
1455	4822 276 13114	Tact Switch
1456	4822 276 13114	Tact Switch
1457	4822 276 13114	Tact Switch
1642	4822 267 40898	Headphone Socket

CAPACITORS

2400	4822 126 13486	15pF 2% 63V
2401	4822 126 13486	15pF 2% 63V
2402	4822 126 10002	100nF 20% 25V
2403	5322 122 32659	33pF 5% 50V
2404	5322 122 32659	33pF 5% 50V
2405	4822 126 13473	220nF +80/-20% 50V
2407	4822 122 33177	10nF 20% 50V
2408	4822 126 12944	47nF 10% 50V
2409	4822 122 33175	2,2nF 20% 50V
2410	4822 126 10002	100nF 20% 25V
2415	5322 122 32531	100pF 5% 50V
2416	4822 126 13692	47pF 1% 63V
2417	4822 126 13692	47pF 1% 63V
2418	4822 126 13692	47pF 1% 63V
2419	4822 126 13692	47pF 1% 63V
2420	4822 126 13692	47pF 1% 63V
2421	4822 126 13692	47pF 1% 63V
2422	4822 126 13692	47pF 1% 63V
2423	5322 116 80853	560pF 5% 63V
2424	4822 124 22652	2,2µF 20% 50V
2425	4822 126 13296	100nF 10% 16V
2426	5322 122 32531	100pF 5% 50V
2427	4822 124 40242	1µF 20% 63V
2428	4822 124 40242	1µF 20% 63V
2429	4822 124 80483	47µF 20% 6,3V
2430	4822 124 42446	100µF 20% 10V
2431	5322 122 32531	100pF 5% 50V
2432	4822 126 10002	100nF 20% 25V
2433	4822 126 13296	100nF 10% 16V
2434	4822 126 13296	100nF 10% 16V
2435	4822 126 13296	100nF 10% 16V
2436	4822 122 33177	10nF 20% 50V
2437	4822 122 33177	10nF 20% 50V
2438	4822 122 33173	560pF 10% 50V
2439	5322 122 32531	100pF 5% 50V
2440	4822 126 13692	47pF 1% 63V
2441	4822 126 13692	47pF 1% 63V
2442	4822 126 13692	47pF 1% 63V
2443	4822 126 13692	47pF 1% 63V
2444	5322 122 32531	100pF 5% 50V
2451	5322 122 32531	100pF 5% 50V
2452	4822 126 13692	47pF 1% 63V
2453	4822 126 13692	47pF 1% 63V
2502	4822 124 40255	100µF 20% 63V
2641	5322 126 10223	4,7nF 10% 63V
2642	4822 126 13296	100nF 10% 16V
2643	5322 122 34123	1nF 10% 50V
2644	4822 124 40433	47µF 20% 25V
2645	4822 124 41579	10µF 20% 50V
2646	5322 126 10223	4,7nF 10% 63V
2647	4822 124 41579	10µF 20% 50V

RESISTORS

3400	4822 051 20105	1M 5% 0,1W
3401	4822 051 20684	680k 5% 0,1W
3402	4822 051 10102	1k 2% 0,25W
3403	4822 117 10834	47k 1% 0,1W
3404	4822 051 10102	1k 2% 0,25W
3405	4822 051 10102	1k 2% 0,25W
3406	4822 051 20471	470R 5% 0,1W
3407	4822 051 20471	470R 5% 0,1W
3408	4822 051 20471	470R 5% 0,1W
3410	4822 051 10102	1k 2% 0,25W
3411	4822 117 11449	2k2 1% 0,1W
3412	4822 117 11449	2k2 1% 0,1W
3413	4822 117 11449	2k2 1% 0,1W
3417	4822 051 10102	1k 2% 0,25W
3418	4822 051 10102	1k 2% 0,25W
3419	4822 051 10102	1k 2% 0,25W
3420	4822 051 10102	1k 2% 0,25W

FRONT BOARD - VARIATION TABLE

Front Boards application

50760	AS680C/21/30
51450	AS680C/22/34

Variation table for Front Board

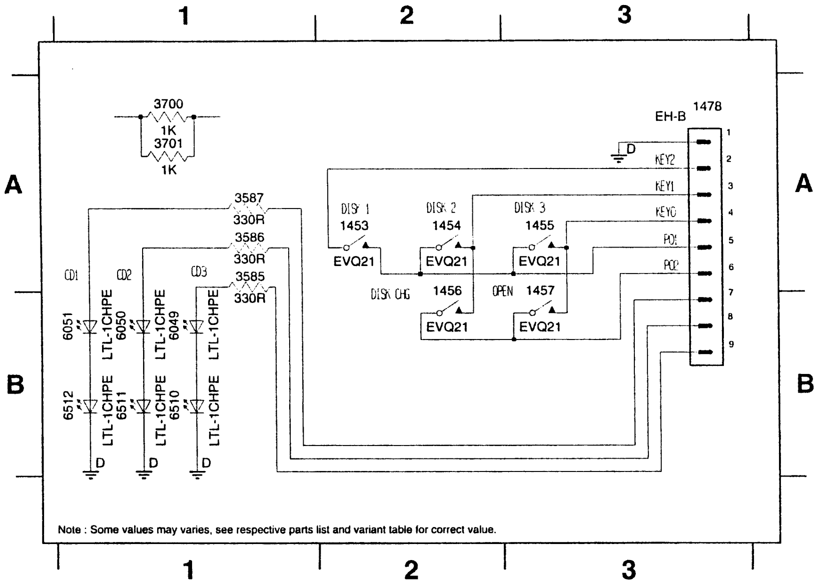
	50760	51450
31	x	-
32	-	x
1641,1642	x	-
2415	-	100p
2420,2421	-	47p
2422	-	47p
2423	-	560p
2424	-	2μ2
2425	-	100n
2438	-	560p
2641	4n7	-
2642	100n	-
2643	1n	-
2644	47μ	-
2645	10μ	-
2646	4n7	-
2647	10μ	-
3533	-	1k
3534	-	220k
3535	-	2k2
3536	10k	-
3537	-	10k
3539	10k	-
3544	-	10k
3642	3k3	-
3643	47k	-
3644	22R	-
3645	3k3	-
3646	470R	-
3647	20k	-
3649	470R	-
3650	180R	-
5415,5417	-	x
5640,5641	x	-
5642	x	-
7406	-	x
7641	x	-
9801	x	-

x = Item in use.

KEY-CDC PART

CIRCUIT DIAGRAM - KEY-CDC PART

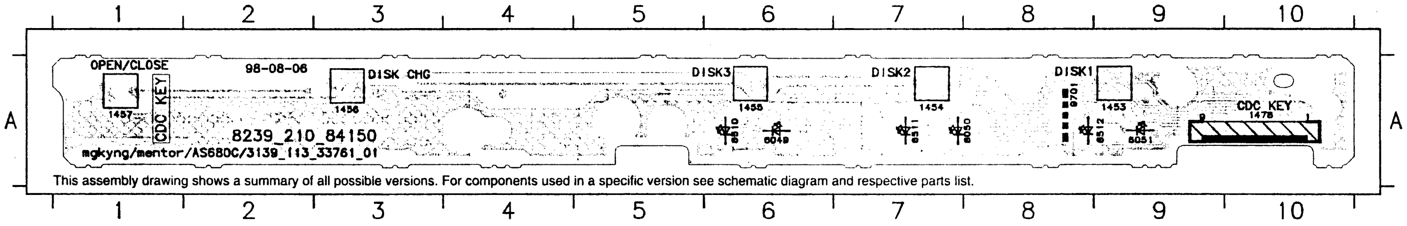
1453 A2 1455 A3 1457 B3 3585 A1 3587 A1 3701 A1 6050 B1 6510 B1 6512 B1
1454 A2 1456 B2 1478 A3 3586 A1 3700 A1 6049 B1 6051 B1 6511 B1


1
2
3
A
B
3700
1K
3701
1K
3587
330R
3586
330R
3585
330R
EH-B
1478
KEY2
KEY1
KEYO
PO1
PO2
DISK 1
1453
DISK 2
1454
DISK 3
1455
EVQ21
DISK CHG
1456
OPEN
1457
CD1
CD2
CD3
6051
6050
6049
6512
6511
6510
LTL-1CHPE
D

Note : Some values may varies, see respective parts list and variant table for correct value.

KEY-CDC BOARD - COMPONENT VIEW

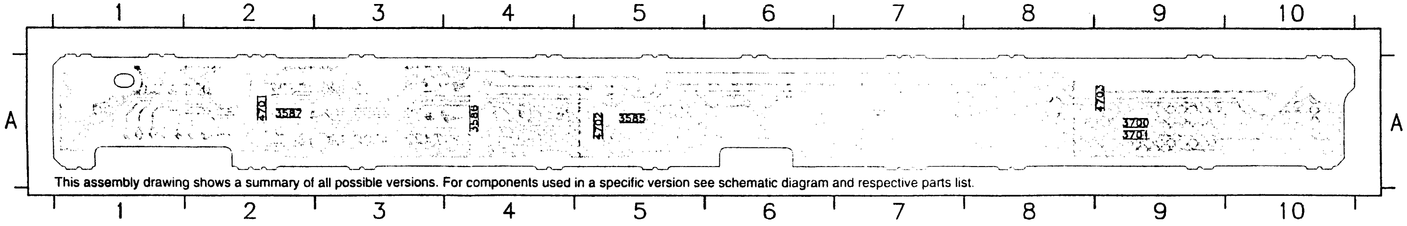
1453 A9 1454 A7 1455 A6 1456 A3 1457 A1 1478 A10 6049 A6 6050 A8 6051 A9 6510 A6 6511 A7 6512 A9 9701 A8


1
2
3
4
5
6
7
8
9
10
A
OPEN/CLOSE
98-08-06
DISK CHG
DISK3
DISK2
DISK1
CDC KEY
1457
1456
1455
1454
1453
1478
8239_210_84150
mgkyng/mentor/AS680C/3139_113_33761_01

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

KEY-CDC BOARD - COPPER SIDE VIEW

3585 A5 3586 A4 3587 A2 3700 A9 3701 A9 4701 A2 4702 A5 4703 A9


1
2
3
4
5
6
7
8
9
10
A
4701
3587
3586
4702
3585
4703
3700
3701

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

RESISTORS

3421	4822 051 10102	1k 2% 0,25W
3422	4822 051 10102	1k 2% 0,25W
3432	4822 117 10833	10k 1% 0,1W
3433	4822 117 10833	10k 1% 0,1W
3435	4822 050 11002	1k 1% 0,4W
3436	4822 050 11002	1k 1% 0,4W
3437	4822 050 11002	1k 1% 0,4W
3438	4822 050 11002	1k 1% 0,4W
3439	4822 050 11002	1k 1% 0,4W
3440	4822 050 11002	1k 1% 0,4W
3441	4822 050 11002	1k 1% 0,4W
3442	4822 050 11002	1k 1% 0,4W
3443	4822 051 10102	1k 2% 0,25W
3444	4822 050 11002	1k 1% 0,4W
3445	4822 051 10102	1k 2% 0,25W
3446	4822 050 11002	1k 1% 0,4W
3447	4822 050 11002	1k 1% 0,4W
3448	4822 050 11002	1k 1% 0,4W
3449	4822 050 11002	1k 1% 0,4W
3450	4822 050 11002	1k 1% 0,4W
3451	4822 050 11002	1k 1% 0,4W
3452	4822 050 11002	1k 1% 0,4W
3453	4822 050 11002	1k 1% 0,4W
3454	4822 050 11002	1k 1% 0,4W
3455	4822 050 11002	1k 1% 0,4W
3456	4822 050 11002	1k 1% 0,4W
3457	4822 050 11002	1k 1% 0,4W
3458	4822 050 11002	1k 1% 0,4W
3459	4822 050 11002	1k 1% 0,4W
3460	4822 050 11002	1k 1% 0,4W
3461	4822 050 11002	1k 1% 0,4W
3463	4822 117 10833	10k 1% 0,1W
3464	4822 117 10833	10k 1% 0,1W
3466	4822 116 83864	10k 5% 0,5W
3467	4822 116 83864	10k 5% 0,5W
3470	4822 117 10833	10k 1% 0,1W
3474	4822 051 10102	1k 2% 0,25W
3475	4822 051 10102	1k 2% 0,25W
3478	4822 051 20104	100k 5% 0,1W
3479	4822 117 10833	10k 1% 0,1W
3490	4822 051 10102	1k 2% 0,25W
3491	4822 051 20101	100R 5% 0,1W
3492	4822 051 20331	330R 5% 0,1W
3493	4822 051 20331	330R 5% 0,1W
3494	4822 051 20331	330R 5% 0,1W
3495	4822 051 20331	330R 5% 0,1W
3496	4822 051 20331	330R 5% 0,1W
3497	4822 051 20331	330R 5% 0,1W
3498	4822 051 20331	330R 5% 0,1W
3499	4822 051 20331	330R 5% 0,1W
3505	4822 051 20331	330R 5% 0,1W
3506	4822 051 20474	470k 5% 0,1W
3507	4822 051 20474	470k 5% 0,1W
3508	4822 051 20474	470k 5% 0,1W
3509	4822 117 10833	10k 1% 0,1W
3510	4822 051 10102	1k 2% 0,25W
3511	4822 117 10833	10k 1% 0,1W
3512	4822 051 10102	1k 2% 0,25W
3523	4822 117 10833	10k 1% 0,1W
3526	4822 117 10833	10k 1% 0,1W
3527	4822 117 10833	10k 1% 0,1W
3528	4822 117 10833	10k 1% 0,1W
3529	4822 051 10102	1k 2% 0,25W
3530	4822 051 10102	1k 2% 0,25W
3531	4822 051 10102	1k 2% 0,25W
3532	4822 051 10102	1k 2% 0,25W
3533	4822 051 10102	1k 2% 0,25W
3534	4822 117 13579	220k 1% 0,1W
3535	4822 117 11449	2k2 1% 0,1W
3536	4822 117 10833	10k 1% 0,1W
3537	4822 117 10833	10k 1% 0,1W
3538	4822 117 10833	10k 1% 0,1W
3539	4822 117 10833	10k 1% 0,1W
3540	4822 051 20331	330R 5% 0,1W
3541	4822 051 20331	330R 5% 0,1W
3542	4822 051 20331	330R 5% 0,1W
3543	4822 051 20121	120R 5% 0,1W
3544	4822 117 10833	10k 1% 0,1W
3545	4822 051 20121	120R 5% 0,1W
3546	4822 051 20121	120R 5% 0,1W
3547	4822 051 20121	120R 5% 0,1W
3548	4822 051 20121	120R 5% 0,1W
3549	4822 051 20121	120R 5% 0,1W
3550	4822 051 20479	47R 5% 0,1W
3551	4822 051 20479	47R 5% 0,1W
3552	4822 051 20121	120R 5% 0,1W
3553	4822 051 20479	47R 5% 0,1W
3554	4822 051 20479	47R 5% 0,1W
3555	4822 051 20121	120R 5% 0,1W
3556	4822 051 20121	120R 5% 0,1W
3557	4822 051 20121	120R 5% 0,1W
3558	4822 051 20121	120R 5% 0,1W
3559	4822 051 20479	47R 5% 0,1W
3560	4822 051 20121	120R 5% 0,1W
3564	4822 051 20331	330R 5% 0,1W
3565	4822 116 80176	1R 5% 0,5W
3566	4822 116 80176	1R 5% 0,5W
3567	4822 116 80176	1R 5% 0,5W
3568	4822 116 80176	1R 5% 0,5W
3569	4822 116 80176	1R 5% 0,5W
3570	4822 116 80176	1R 5% 0,5W
3571	4822 051 20104	100k 5% 0,1W
3578	4822 051 20104	100k 5% 0,1W
3579	4822 051 20479	47R 5% 0,1W
3580	4822 117 10833	10k 1% 0,1W
3581	4822 117 10833	10k 1% 0,1W
3582	4822 117 10833	10k 1% 0,1W
3583	4822 117 10833	10k 1% 0,1W
3585	4822 117 11448	180R 1% 0,1W
3586	4822 117 11448	180R 1% 0,1W
3587	4822 117 11448	180R 1% 0,1W
3589	4822 051 20121	120R 5% 0,1W
3592	4822 051 10102	1k 2% 0,25W
3593	4822 117 10833	10k 1% 0,1W
3594	4822 117 10833	10k 1% 0,1W
3595	4822 117 10833	10k 1% 0,1W
3596	4822 051 20474	470k 5% 0,1W
3597	4822 117 10833	10k 1% 0,1W
3598	4822 117 10833	10k 1% 0,1W
3599	4822 117 10834	47k 1% 0,1W
3600	4822 051 20104	100k 5% 0,1W
3601	4822 051 10102	1k 2% 0,25W
3602	4822 051 10102	1k 2% 0,25W
3606	4822 051 20471	470R 5% 0,1W
3607	4822 051 20471	470R 5% 0,1W
3608	4822 117 11503	220R 1% 0.1W
3609	4822 051 10102	1k 2% 0,25W
3610	4822 051 10102	1k 2% 0,25W
3612	4822 051 10102	1k 2% 0,25W
3615	4822 051 10102	1k 2% 0,25W
3616	4822 051 20471	470R 5% 0,1W
3617	4822 051 10102	1k 2% 0,25W
3618	4822 117 10833	10k 1% 0,1W
3621	4822 051 10102	1k 2% 0,25W
3631	4822 117 10833	10k 1% 0,1W
3632	4822 051 20121	120R 5% 0,1W
3640	4822 117 10833	10k 1% 0,1W
3642	4822 051 20332	3k3 5% 0,1W
3643	4822 117 10834	47k 1% 0,1W
3644	4822 051 20229	22R 5% 0,1W
3645	4822 051 20332	3k3 5% 0,1W
3646	4822 051 20471	470R 5% 0,1W
3647	4822 101 21204	20kA
3649	4822 051 20471	470R 5% 0,1W
3650	4822 117 11448	180R 1% 0,1W
3700	4822 051 10102	1k 2% 0,25W
3701	4822 051 10102	1k 2% 0,25W
4001	4822 051 20008	0R Jumper 0805
4002	4822 051 20008	0R Jumper 0805
4003	4822 051 20008	0R Jumper 0805
4004	4822 051 20008	0R Jumper 0805
4005	4822 051 20008	0R Jumper 0805
4006	4822 051 20008	0R Jumper 0805
4007	4822 051 20008	0R Jumper 0805
4008	4822 051 20008	0R Jumper 0805
4009	4822 051 20008	0R Jumper 0805
4010	4822 051 20008	0R Jumper 0805
4011	4822 051 20008	0R Jumper 0805
4012	4822 051 20008	0R Jumper 0805
4013	4822 051 20008	0R Jumper 0805
4014	4822 051 20008	0R Jumper 0805
4015	4822 051 20008	0R Jumper 0805
4016	4822 051 20008	0R Jumper 0805
4017	4822 051 20008	0R Jumper 0805
4018	4822 051 20008	0R Jumper 0805
4019	4822 051 20008	0R Jumper 0805
4020	4822 051 20008	0R Jumper 0805
4021	4822 051 20008	0R Jumper 0805
4022	4822 051 20008	0R Jumper 0805
4023	4822 051 20008	0R Jumper 0805
4024	4822 051 20008	0R Jumper 0805
4025	4822 051 20008	0R Jumper 0805
4026	4822 051 20008	0R Jumper 0805
4027	4822 051 20008	0R Jumper 0805
4028	4822 051 20008	0R Jumper 0805
4101	4822 051 20008	0R Jumper 0805
4102	4822 051 20008	0R Jumper 0805
4103	4822 051 20008	0R Jumper 0805
4104	4822 051 20008	0R Jumper 0805
4105	4822 051 20008	0R Jumper 0805
4106	4822 051 20008	0R Jumper 0805
4107	4822 051 20008	0R Jumper 0805
4108	4822 051 20008	0R Jumper 0805
4109	4822 051 20008	0R Jumper 0805
4110	4822 051 20008	0R Jumper 0805
4111	4822 051 20008	0R Jumper 0805
4112	4822 051 20008	0R Jumper 0805
4113	4822 051 20008	0R Jumper 0805
4114	4822 051 20008	0R Jumper 0805
4115	4822 051 20008	0R Jumper 0805
4116	4822 051 20008	0R Jumper 0805
4117	4822 051 20008	0R Jumper 0805
4118	4822 051 20008	0R Jumper 0805
4119	4822 051 20008	0R Jumper 0805
4120	4822 051 20008	0R Jumper 0805
4121	4822 051 20008	0R Jumper 0805
4122	4822 051 20008	0R Jumper 0805
4123	4822 051 20008	0R Jumper 0805
4124	4822 051 20008	0R Jumper 0805
4125	4822 051 20008	0R Jumper 0805
4126	4822 051 20008	0R Jumper 0805
4127	4822 051 20008	0R Jumper 0805
4128	4822 051 20008	0R Jumper 0805
4129	4822 051 20008	0R Jumper 0805

ELECTRICAL PARTS LIST - FRONT BOARD

RESISTORS

4130	4822 051 20008	0R Jumper 0805
4131	4822 051 20008	0R Jumper 0805
4132	4822 051 20008	0R Jumper 0805
4133	4822 051 20008	0R Jumper 0805
4201	4822 051 20008	0R Jumper 0805
4202	4822 051 20008	0R Jumper 0805
4203	4822 051 20008	0R Jumper 0805
4204	4822 051 20008	0R Jumper 0805
4205	4822 051 20008	0R Jumper 0805
4206	4822 051 20008	0R Jumper 0805
4207	4822 051 20008	0R Jumper 0805
4208	4822 051 20008	0R Jumper 0805
4209	4822 051 20008	0R Jumper 0805
4210	4822 051 20008	0R Jumper 0805
4211	4822 051 20008	0R Jumper 0805
4212	4822 051 20008	0R Jumper 0805
4213	4822 051 20008	0R Jumper 0805
4214	4822 051 20008	0R Jumper 0805
4215	4822 051 20008	0R Jumper 0805
4216	4822 051 20008	0R Jumper 0805
4217	4822 051 20008	0R Jumper 0805
4218	4822 051 20008	0R Jumper 0805
4219	4822 051 20008	0R Jumper 0805
4220	4822 051 20008	0R Jumper 0805
4221	4822 051 20008	0R Jumper 0805
4222	4822 051 20008	0R Jumper 0805
4223	4822 051 20008	0R Jumper 0805
4224	4822 051 20008	0R Jumper 0805
4225	4822 051 20008	0R Jumper 0805
4226	4822 051 20008	0R Jumper 0805
4227	4822 051 20008	0R Jumper 0805
4228	4822 051 20008	0R Jumper 0805
4229	4822 051 20008	0R Jumper 0805
4230	4822 051 20008	0R Jumper 0805
4231	4822 051 20008	0R Jumper 0805
4232	4822 051 20008	0R Jumper 0805
4233	4822 051 20008	0R Jumper 0805
4234	4822 051 20008	0R Jumper 0805
4235	4822 051 20008	0R Jumper 0805
4236	4822 051 20008	0R Jumper 0805
4237	4822 051 20008	0R Jumper 0805
4238	4822 051 20008	0R Jumper 0805
4239	4822 051 20008	0R Jumper 0805
4240	4822 051 20008	0R Jumper 0805
4241	4822 051 20008	0R Jumper 0805
4242	4822 051 20008	0R Jumper 0805
4243	4822 051 20008	0R Jumper 0805
4244	4822 051 20008	0R Jumper 0805
4245	4822 051 20008	0R Jumper 0805
4246	4822 051 20008	0R Jumper 0805
4247	4822 051 20008	0R Jumper 0805
4248	4822 051 20008	0R Jumper 0805
4249	4822 051 20008	0R Jumper 0805
4250	4822 051 20008	0R Jumper 0805
4422	4822 051 20008	0R Jumper 0805
4501	4822 051 20008	0R Jumper 0805
4616	4822 051 20008	0R Jumper 0805
4617	4822 051 20008	0R Jumper 0805
4618	4822 051 20008	0R Jumper 0805
4619	4822 051 20008	0R Jumper 0805
4620	4822 051 20008	0R Jumper 0805
4701	4822 051 20008	0R Jumper 0805
4702	4822 051 20008	0R Jumper 0805
4703	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5412	4822 242 70938	X'tal Resonator 32,768kHz
5413	4822 242 72066	Ceram Resonator 8MHz
5414	4822 156 21721	Coil 2U2 10%
5415	4822 156 21721	Coil 2U2 10%
5416	4822 156 21721	Coil 2U2 10%
5417	4822 242 72195	QUARZ 4,332MHz
5640	4822 157 11235	Coil 22µH 5%
5641	4822 157 11235	Coil 22µH 5%
5642	4822 157 11235	Coil 22µH 5%

DIODES

6004	4822 130 30621	1N4148
6006	4822 130 30621	1N4148
6008	4822 130 30621	1N4148
6010	4822 130 30621	1N4148
6011	4822 130 30621	1N4148
6013	4822 130 30621	1N4148
6014	4822 130 30621	1N4148
6015	4822 130 30621	1N4148
6017	4822 130 30621	1N4148
6018	4822 130 30621	1N4148
6020	4822 130 30621	1N4148
6021	4822 130 30621	1N4148
6022	4822 130 30621	1N4148
6028	4822 130 31878 △	1N4003G
6029	4822 130 30621	1N4148
6049	4822 130 10792	LTL-1CHPE
6050	4822 130 10792	LTL-1CHPE
6051	4822 130 10792	LTL-1CHPE
6055	4822 130 30621	1N4148
6056	4822 130 30621	1N4148
6411	4822 130 10791	LTL-1CHGE
6412	4822 130 10791	LTL-1CHGE
6413	4822 130 10791	LTL-1CHGE
6416	4822 130 10791	LTL-1CHGE
6417	4822 130 10791	LTL-1CHGE
6418	4822 130 10791	LTL-1CHGE
6419	4822 130 11138	LTL-1CHYE
6421	4822 130 11138	LTL-1CHYE
6423	4822 130 11138	LTL-1CHYE
6425	4822 130 11138	LTL-1CHYE
6427	4822 130 11138	LTL-1CHYE
6431	4822 130 10791	LTL-1CHGE
6433	4822 130 10791	LTL-1CHGE
6434	4822 130 10791	LTL-1CHGE
6500	4822 130 10791	LTL-1CHGE
6501	4822 130 10791	LTL-1CHGE
6502	4822 130 10791	LTL-1CHGE
6503	4822 130 10791	LTL-1CHGE
6504	4822 130 10791	LTL-1CHGE
6505	4822 130 10791	LTL-1CHGE
6506	4822 130 10791	LTL-1CHGE
6507	4822 130 10791	LTL-1CHGE
6508	4822 130 10791	LTL-1CHGE
6509	4822 130 10791	LTL-1CHGE
6510	4822 130 10792	LTL-1CHPE
6511	4822 130 10792	LTL-1CHPE
6512	4822 130 10792	LTL-1CHPE

TRANSISTORS & INTEGRATED CIRCUITS

7400	4822 209 17176	TMP87CS71F - '680S51741'
7401	4822 209 31508	ST24C01B6
7402	4822 209 15449	74HC4094D
7403	4822 209 15449	74HC4094D
7404	4822 209 15449	74HC4094D
7405	4822 130 10165	GP1U28XP
7406	4822 209 31981	SAA6579T
7407	4822 130 60511	BC847B
7408	4822 130 60511	BC847B
7411	4822 130 60511	BC847B
7641	4822 130 41096	BC550C

Note : Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS LIST - FRONT BOARD

RESISTORS

4130	4822 051 20008	0R Jumper 0805
4131	4822 051 20008	0R Jumper 0805
4132	4822 051 20008	0R Jumper 0805
4133	4822 051 20008	0R Jumper 0805
4201	4822 051 20008	0R Jumper 0805
4202	4822 051 20008	0R Jumper 0805
4203	4822 051 20008	0R Jumper 0805
4204	4822 051 20008	0R Jumper 0805
4205	4822 051 20008	0R Jumper 0805
4206	4822 051 20008	0R Jumper 0805
4207	4822 051 20008	0R Jumper 0805
4208	4822 051 20008	0R Jumper 0805
4209	4822 051 20008	0R Jumper 0805
4210	4822 051 20008	0R Jumper 0805
4211	4822 051 20008	0R Jumper 0805
4212	4822 051 20008	0R Jumper 0805
4213	4822 051 20008	0R Jumper 0805
4214	4822 051 20008	0R Jumper 0805
4215	4822 051 20008	0R Jumper 0805
4216	4822 051 20008	0R Jumper 0805
4217	4822 051 20008	0R Jumper 0805
4218	4822 051 20008	0R Jumper 0805
4219	4822 051 20008	0R Jumper 0805
4220	4822 051 20008	0R Jumper 0805
4221	4822 051 20008	0R Jumper 0805
4222	4822 051 20008	0R Jumper 0805
4223	4822 051 20008	0R Jumper 0805
4224	4822 051 20008	0R Jumper 0805
4225	4822 051 20008	0R Jumper 0805
4226	4822 051 20008	0R Jumper 0805
4227	4822 051 20008	0R Jumper 0805
4228	4822 051 20008	0R Jumper 0805
4229	4822 051 20008	0R Jumper 0805
4230	4822 051 20008	0R Jumper 0805
4231	4822 051 20008	0R Jumper 0805
4232	4822 051 20008	0R Jumper 0805
4233	4822 051 20008	0R Jumper 0805
4234	4822 051 20008	0R Jumper 0805
4235	4822 051 20008	0R Jumper 0805
4236	4822 051 20008	0R Jumper 0805
4237	4822 051 20008	0R Jumper 0805
4238	4822 051 20008	0R Jumper 0805
4239	4822 051 20008	0R Jumper 0805
4240	4822 051 20008	0R Jumper 0805
4241	4822 051 20008	0R Jumper 0805
4242	4822 051 20008	0R Jumper 0805
4243	4822 051 20008	0R Jumper 0805
4244	4822 051 20008	0R Jumper 0805
4245	4822 051 20008	0R Jumper 0805
4246	4822 051 20008	0R Jumper 0805
4247	4822 051 20008	0R Jumper 0805
4248	4822 051 20008	0R Jumper 0805
4249	4822 051 20008	0R Jumper 0805
4250	4822 051 20008	0R Jumper 0805
4422	4822 051 20008	0R Jumper 0805
4501	4822 051 20008	0R Jumper 0805
4616	4822 051 20008	0R Jumper 0805
4617	4822 051 20008	0R Jumper 0805
4618	4822 051 20008	0R Jumper 0805
4619	4822 051 20008	0R Jumper 0805
4620	4822 051 20008	0R Jumper 0805
4701	4822 051 20008	0R Jumper 0805
4702	4822 051 20008	0R Jumper 0805
4703	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5412	4822 242 70938	X'tal Resonator 32,768kHz
5413	4822 242 72066	Ceram Resonator 8MHz
5414	4822 156 21721	Coil 2U2 10%
5415	4822 156 21721	Coil 2U2 10%
5416	4822 156 21721	Coil 2U2 10%
5417	4822 242 72195	QUARZ 4,332MHz
5640	4822 157 11235	Coil 22µH 5%
5641	4822 157 11235	Coil 22µH 5%
5642	4822 157 11235	Coil 22µH 5%

DIODES

6004	4822 130 30621	1N4148
6006	4822 130 30621	1N4148
6008	4822 130 30621	1N4148
6010	4822 130 30621	1N4148
6011	4822 130 30621	1N4148
6013	4822 130 30621	1N4148
6014	4822 130 30621	1N4148
6015	4822 130 30621	1N4148
6017	4822 130 30621	1N4148
6018	4822 130 30621	1N4148
6020	4822 130 30621	1N4148
6021	4822 130 30621	1N4148
6022	4822 130 30621	1N4148
6028	4822 130 31878 △	1N4003G
6029	4822 130 30621	1N4148
6049	4822 130 10792	LTL-1CHPE
6050	4822 130 10792	LTL-1CHPE
6051	4822 130 10792	LTL-1CHPE
6055	4822 130 30621	1N4148
6056	4822 130 30621	1N4148
6411	4822 130 10791	LTL-1CHGE
6412	4822 130 10791	LTL-1CHGE
6413	4822 130 10791	LTL-1CHGE
6416	4822 130 10791	LTL-1CHGE
6417	4822 130 10791	LTL-1CHGE

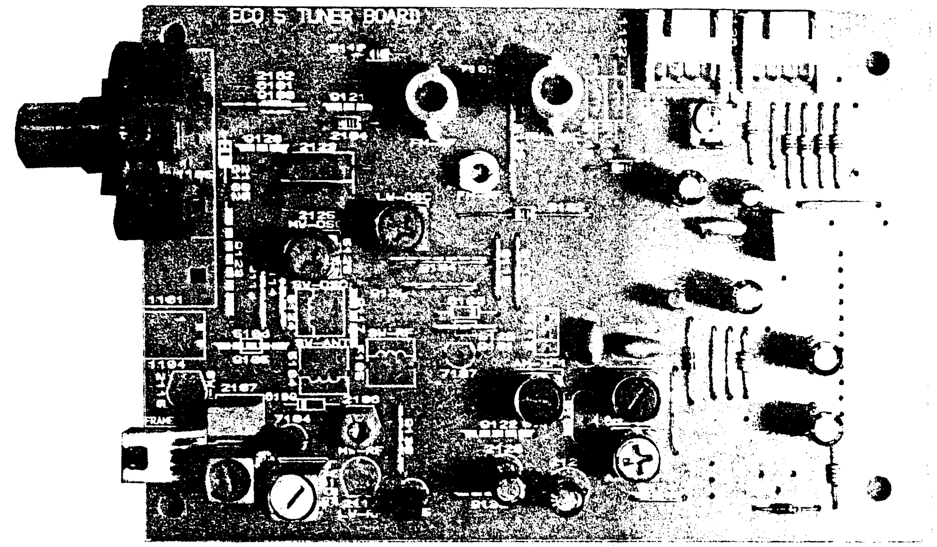
ELECTRICAL PARTS LIST - FRONT BOARD

6418	4822 130 10791	LTL-1CHGE
6419	4822 130 11138	LTL-1CHYE
6421	4822 130 11138	LTL-1CHYE
6423	4822 130 11138	LTL-1CHYE
6425	4822 130 11138	LTL-1CHYE
6427	4822 130 11138	LTL-1CHYE
6431	4822 130 10791	LTL-1CHGE
6433	4822 130 10791	LTL-1CHGE
6434	4822 130 10791	LTL-1CHGE
6500	4822 130 10791	LTL-1CHGE
6501	4822 130 10791	LTL-1CHGE
6502	4822 130 10791	LTL-1CHGE
6503	4822 130 10791	LTL-1CHGE
6504	4822 130 10791	LTL-1CHGE
6505	4822 130 10791	LTL-1CHGE
6506	4822 130 10791	LTL-1CHGE
6507	4822 130 10791	LTL-1CHGE
6508	4822 130 10791	LTL-1CHGE
6509	4822 130 10791	LTL-1CHGE
6510	4822 130 10792	LTL-1CHPE
6511	4822 130 10792	LTL-1CHPE
6512	4822 130 10792	LTL-1CHPE

TRANSISTORS & INTEGRATED CIRCUITS

7400	4822 209 17176	TMP87CS71F - '680S51741'
7401	4822 209 31508	ST24C01B6
7402	4822 209 15449	74HC4094D
7403	4822 209 15449	74HC4094D
7404	4822 209 15449	74HC4094D
7405	4822 130 10165	GP1U28XP
7406	4822 209 31981	SAA6579T
7407	4822 130 60511	BC847B
7408	4822 130 60511	BC847B
7411	4822 130 60511	BC847B
7641	4822 130 41096	BC550C

Note : Only the parts mentioned in this list are normal service spare parts.

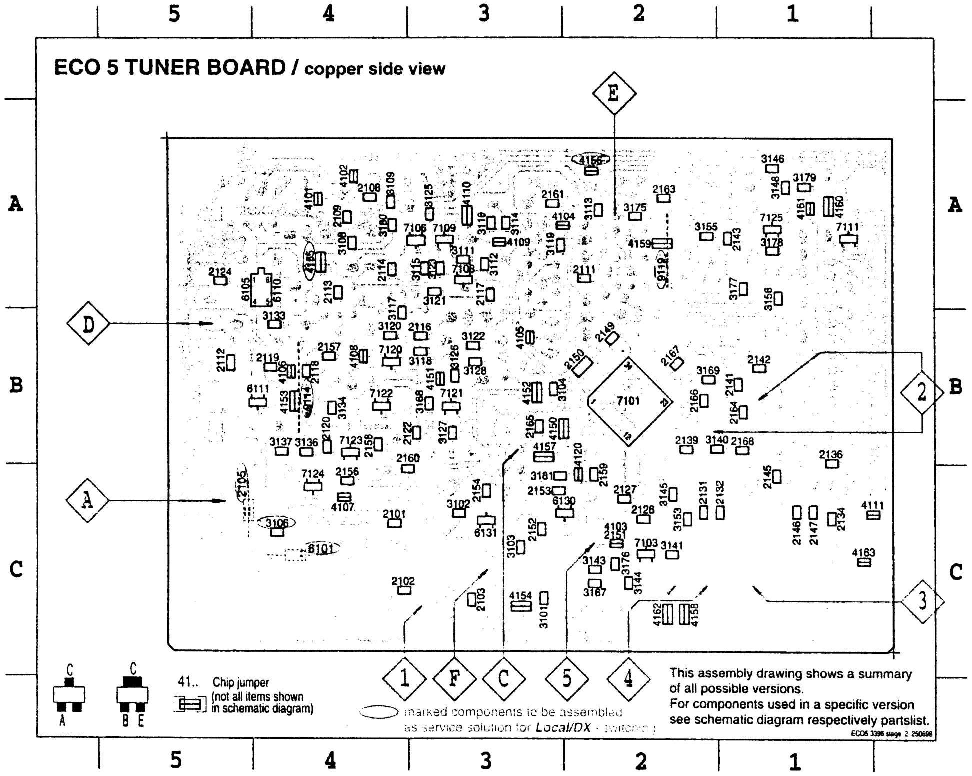

ECO 5 TUNER BOARD

TUNER BOARD ECO5

TABLE OF CONTENTS

Blockdiagram 7B-1
Adjustmant table 7B-2
Component layout...7B-2
Circuit diagram..7B-3
Partslist 7B-4

2101 C4	2118 B4	2139 B2	2153 C3	2166 B2	3112 A3	3123 A3	3143 C2	3175 A2	4105 B3	4153 B4	6105 A4	7120 B4
2102 C4	2119 B4	2141 B1	2154 C3	2167 B2	3113 A2	3125 A3	3144 C2	3176 C2	4106 B4	4154 C3	6110 A4	7121 B3
2103 C3	2120 B4	2142 B1	2156 C4	2168 B1	3114 A3	3126 B3	3145 C2	3177 A1	4107 C4	4155 A4	6111 B4	7122 B4
2108 A4	2122 B3	2143 A1	2157 B4	3101 C3	3115 A3	3127 B3	3146 A1	3178 A1	4108 B4	4156 A2	6130 C2	7123 B4
2109 A4	2124 A5	2145 C1	2158 B4	3102 C3	3116 A3	3128 B3	3148 A1	3179 A1	4109 A3	4157 B3	6131 C3	7124 C4
2111 A2	2126 C2	2146 C1	2159 C2	3103 C3	3117 B4	3133 B4	3153 C2	3180 A4	4110 A3	4158 C2	7101 B2	7125 A1
2112 B5	2127 C2	2147 C1	2160 C4	3104 B3	3118 B3	3134 B4	3155 A2	3181 C3	4111 C1	4159 A2	7103 C2	
2113 A4	2131 C2	2149 B2	2161 A3	3106 C4	3119 A3	3136 B4	3156 A1	4101 A4	4120 C2	4160 A1	7106 A3	
2114 A4	2132 C1	2150 B2	2163 A2	3108 A4	3120 B4	3137 B4	3167 C2	4102 A4	4150 B2	4161 A1	7108 A3	
2116 B3	2134 C1	2151 C2	2164 B1	3109 A4	3121 A3	3140 B2	3168 B3	4103 C2	4151 B3	4162 C1	7109 A3	
2117 A3	2136 B1	2152 C3	2165 B3	3111 A3	3122 B3	3141 C2	3169 B2	4104 A2	4152 B3	4163 C1	7111 A1	


5
4
3
2
1
A
B
C
E
D
A
1
F
C
5
4
2
3
7101
4156
3146
3179
2163
2161
4104
3175
3155
7125
7111
4159
2108
3109
4102
4110
7106
7109
4109
2124
6105
3133
2113
2111
3177
3158
3120
2116
3122
2157
2119
7120
2112
6111
4153
2118
7122
7121
2150
2149
2167
3169
2142
2166
2141
2164
3137
3136
7123
2160
4157
4120
2139
3140
2168
2136
2105
7124
2156
4107
3106
2101
3102
2154
6131
3181
2153
6130
2127
2128
3145
2131
2132
2145
2146
2147
2134
4111
4163
6101
2102
2103
4154
3101
3143
3167
7103
3141
3144
4162
4158
C
A
C
B E
41..

ECO 5 TUNER BOARD / copper side view

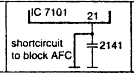
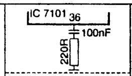
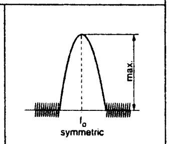
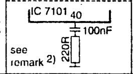
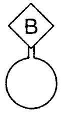
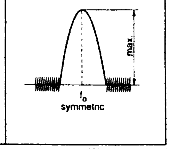
41.. Chip jumper (not all items shown in schematic diagram)

marked components to be assembled as service solution for *Local/DX* - switching

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

ECO5 3396 stage 2 250698

TUNER ADJUSTMENT TABLE (ECO5 FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	◇1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 50mV continuous wave	◇F	 IC 7101 21 shortcircuit to block AFC 2141	5119	◇2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	◇A	108MHz	2155	◇4	MAX ↕
	87.5MHz (65.81MHz)	mod=1kHz Δf=±22.5kHz	87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	◇A	98MHz	3142	◇3	152kHz ±1kHz 1)
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with short wire to ground (pin 4)	◇C Δf=±15kHz V_{RF} = 3mV	 IC 7101 36 100nF 220R	5111	◇4	
			 IC 7101 40 100nF 220R see remark 2)	5112		
AM AFC **MW**		◇C continuous wave V_{RF} = 10mV		5114	◇2	0 ± 2 mV DC
AM RF 3)						
MW 4) FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	 Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	◇4	 ↕
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		↕
	560kHz		560kHz	5102		

ECO5, descr. col, 090797

Use service test program. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

1) If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

2) RC network serves for damping the IF-filter while adjusting the other one.

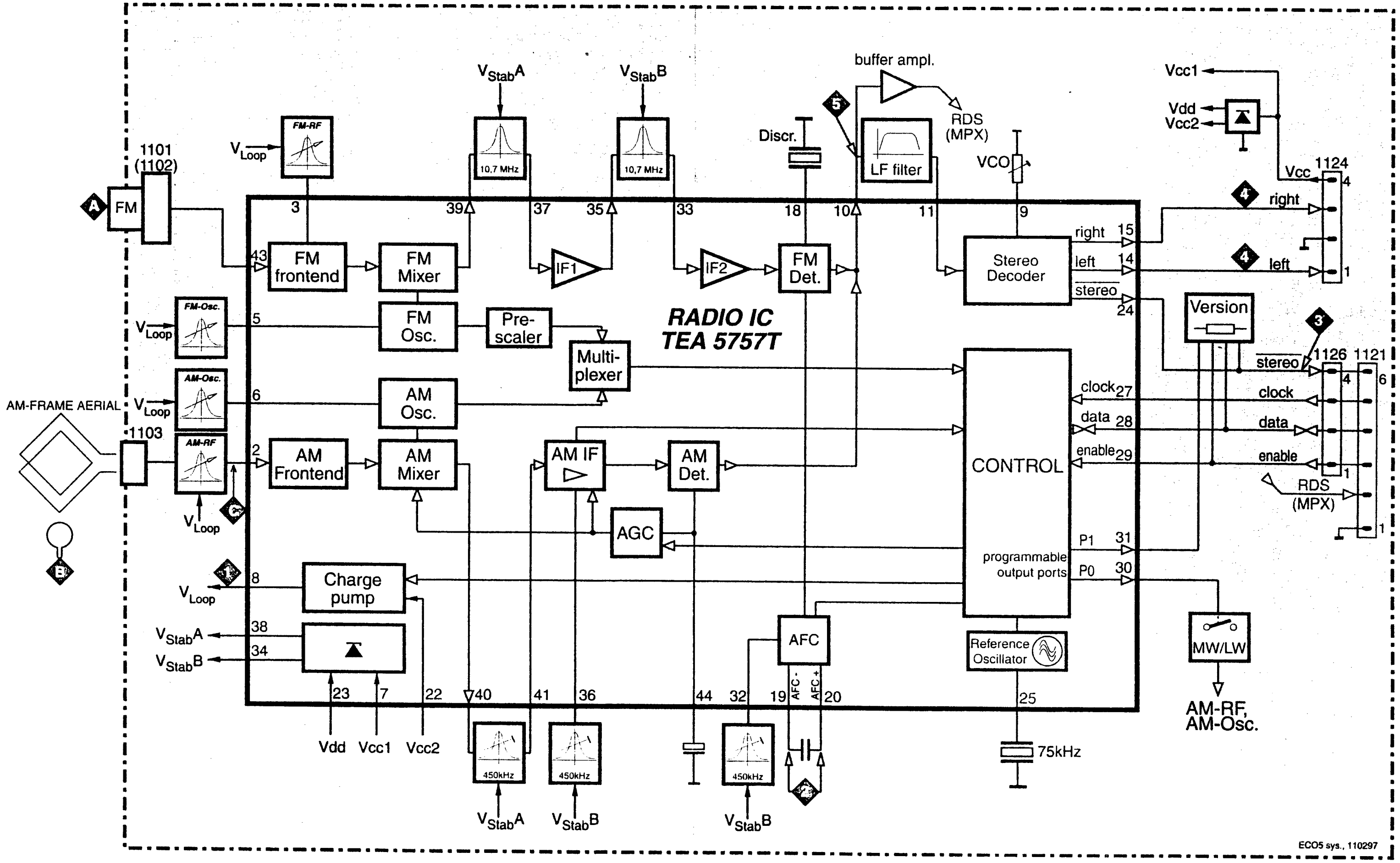
3) For AM RF adjustments the original frame antenna has to be used !

4) MW has to be aligned before LW.

↕ Repeat

BLOCKDIAGRAM

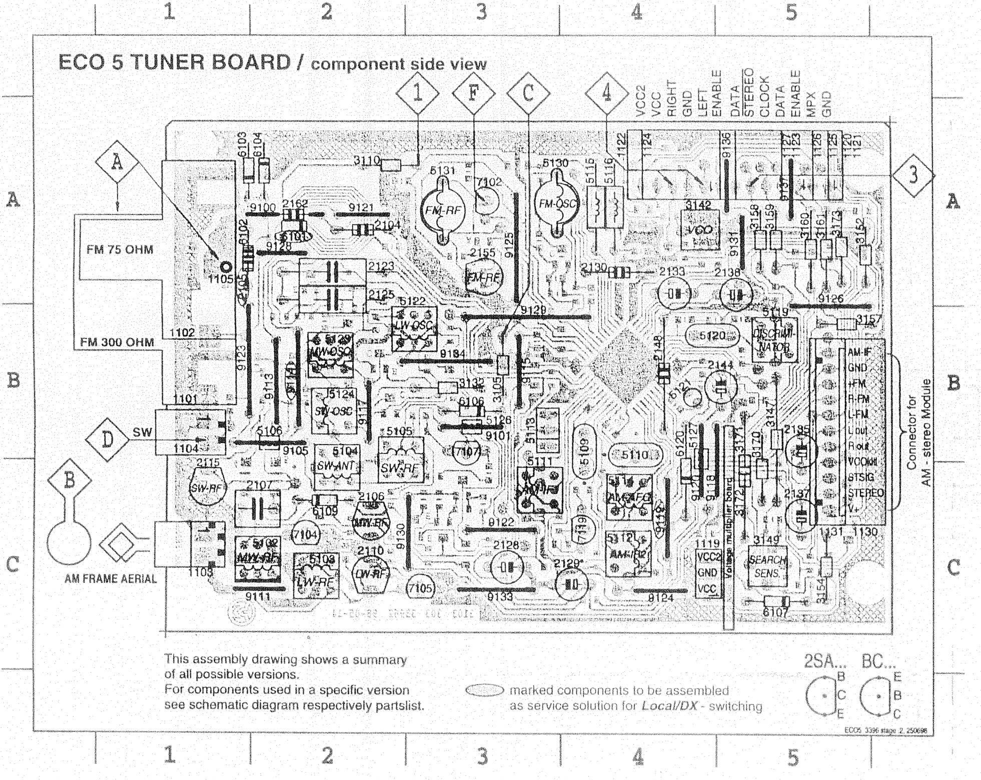
TUNER BOARD
ECO 5 systems



A
FM
1101
(1102)
V$_{Loop}$
FM-RF
V$_{Stab}$A
10,7 MHz
V$_{Stab}$B
10,7 MHz
Discr.
5
buffer ampl.
RDS
(MPX)
LF filter
VCO
Vcc1
Vdd
Vcc2
Vcc
1124
4
right
4
left
1
3
39
37
35
33
18
10
11
9
43
FM frontend
FM Mixer
IF1
IF2
FM Det.
Stereo Decoder
right
15
left
14
stereo
24
FM-Osc.
5
FM Osc.
Pre-scaler
Multi-plexer
RADIO IC
TEA 5757T
Version
3
stereo
1126
1121
4
6
AM-Osc.
6
AM Osc.
clock
27
clock
data
28
data
enable
29
enable
1
RDS
(MPX)
1
AM-FRAME AERIAL
1103
AM-RF
2
AM Frontend
AM Mixer
AM IF
AM Det.
CONTROL
C
AGC
B
1
8
Charge pump
programmable output ports
P1
31
P0
30
38
34
V$_{Stab}$A
V$_{Stab}$B
23
7
22
40
41
36
44
32
19
AFC -
AFC +
20
AFC
Reference Oscillator
25
MW/LW
AM-RF,
AM-Osc.
Vdd
Vcc1
Vcc2
450kHz
450kHz
450kHz
2
75kHz
V$_{Stab}$A
V$_{Stab}$B
V$_{Stab}$B
ECO5 sys., 110297

1101	A1	2106	C2	2137	C5	3149	C5	3173	A5	5114	C4	5130	A3	7104	C2	9117	B2	9129	B3
1102	A1	2107	C2	2138	A5	3152	A5	5102	C2	5115	A4	5131	A3	7105	C3	9118	B4	9130	C3
1103	C1	2110	C2	2144	B5	3154	C5	5103	C2	5116	A4	6101	A2	7107	B3	9119	C4	9131	A5
1104	B1	2115	C1	2148	B4	3157	B5	5104	C2	5119	B5	6102	A1	7119	C4	9120	B4	9133	C3
1105	A1	2123	A2	2155	A3	3158	A5	5105	B2	5120	B4	6103	A1	9100	A2	9121	A2	9134	B3
1119	C5	2125	A2	2162	A2	3159	A5	5106	B2	5121	B4	6104	A2	9101	B3	9122	C3	9136	A5
1120	A5	2128	C3	3105	B3	3160	A5	5109	B4	5122	B3	6106	B3	9105	B2	9123	B1	9137	A5
1130	B5	2129	C4	3110	A2	3161	A5	5110	B4	5123	B2	6107	C5	9111	C2	9124	C4		
1131	B5	2130	A4	3132	B3	3170	C5	5111	C3	5124	B2	6109	C2	9113	B2	9125	A3		
2104	A2	2133	A4	3142	A4	3171	C5	5112	C4	5126	B3	6120	C4	9114	B2	9126	B5		
2105	A1	2135	B5	3147	B5	3172	C5	5113	B3	5127	B4	7102	A3	9115	B3	9128	A2		

ECO 5 TUNER BOARD / component side view


1
2
3
4
5
A
B
C
1
F
C
4
3
A
D
B
VCC2
VCC
RIGHT
GND
LEFT
ENABLE
DATA
STEREO
CLOCK
DATA
ENABLE
MPX
GND
FM 75 OHM
FM 300 OHM
SW
AM FRAME AERIAL
FM-RF
FM-OSC
VCO
FM-RF
LW-OSC
MW-OSC
SW-OSC
SW-ANT
SW-RF
SW-RF
MW-RF
LW-RF
MW-RF
LW-RF
AM-IFC
AM-IF2
DISCRIMINATOR
SEARCH SENS.
AM-IF
GND
+FM
R-FM
L-FM
Lout
Rout
VCOM
STSIG
STEREO
VCC2
GND
VCC
Connector for AM - stereo Module
2SA...
BC...
B
C
E
B
E
C

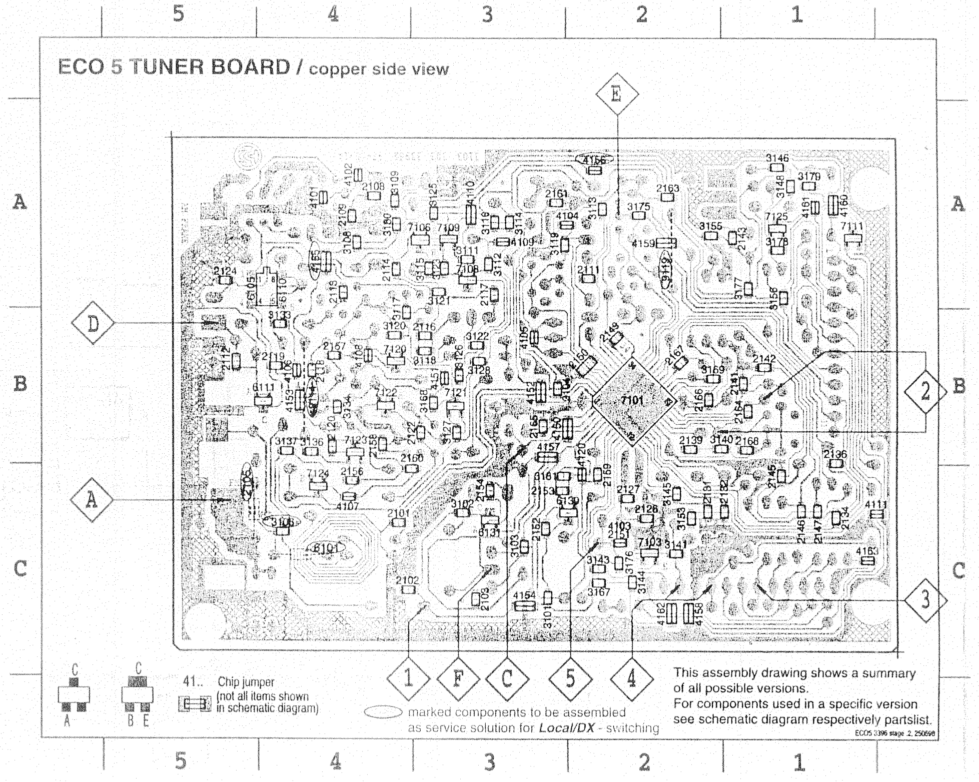
This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

marked components to be assembled as service solution for *Local/DX* - switching

ECO5 3396 stage 2 250698

2101	C4	2118	B4	2139	B2	2153	C3	2166	B2	3112	A3	3123	A3	3143	C2	3175	A2	4105	B3	4153	B4	6105	A4	7120	B4
2102	C4	2119	B4	2141	B1	2154	C3	2167	B2	3113	A2	3125	A3	3144	C2	3176	C2	4106	B4	4154	C3	6110	A4	7121	B3
2103	C3	2120	B4	2142	B1	2156	C4	2168	B1	3114	A3	3126	B3	3145	C2	3177	A1	4107	C4	4155	A4	6111	B4	7122	B4
2108	A4	2122	B3	2143	A1	2157	B4	3101	C3	3115	A3	3127	B3	3146	A1	3178	A1	4108	B4	4156	A2	6130	C2	7123	B4
2109	A4	2124	A5	2145	C1	2158	B4	3102	C3	3116	A3	3128	B3	3148	A1	3179	A1	4109	A3	4157	B3	6131	C3	7124	C4
2111	A2	2126	C2	2146	C1	2159	C2	3103	C3	3117	B4	3133	B4	3153	C2	3180	A4	4110	A3	4158	C2	7101	B2	7125	A1
2112	B5	2127	C2	2147	C1	2160	C4	3104	B3	3118	B3	3134	B4	3155	A2	3181	C3	4111	C1	4159	A2	7103	C2		
2113	A4	2131	C2	2149	B2	2161	A3	3106	C4	3119	A3	3136	B4	3156	A1	4101	A4	4120	C2	4160	A1	7106	A3		
2114	A4	2132	C1	2150	B2	2163	A2	3108	A4	3120	B4	3137	B4	3167	C2	4102	A4	4150	B2	4161	A1	7108	A3		
2116	B3	2134	C1	2151	C2	2164	B1	3109	A4	3121	A3	3140	B2	3168	B3	4103	C2	4151	B3	4162	C1	7109	A3		
2117	A3	2136	B1	2152	C3	2165	B3	3111	A3	3122	B3	3141	C2	3169	B2	4104	A2	4152	B3	4163	C1	7111	A1		

ECO 5 TUNER BOARD / copper side view

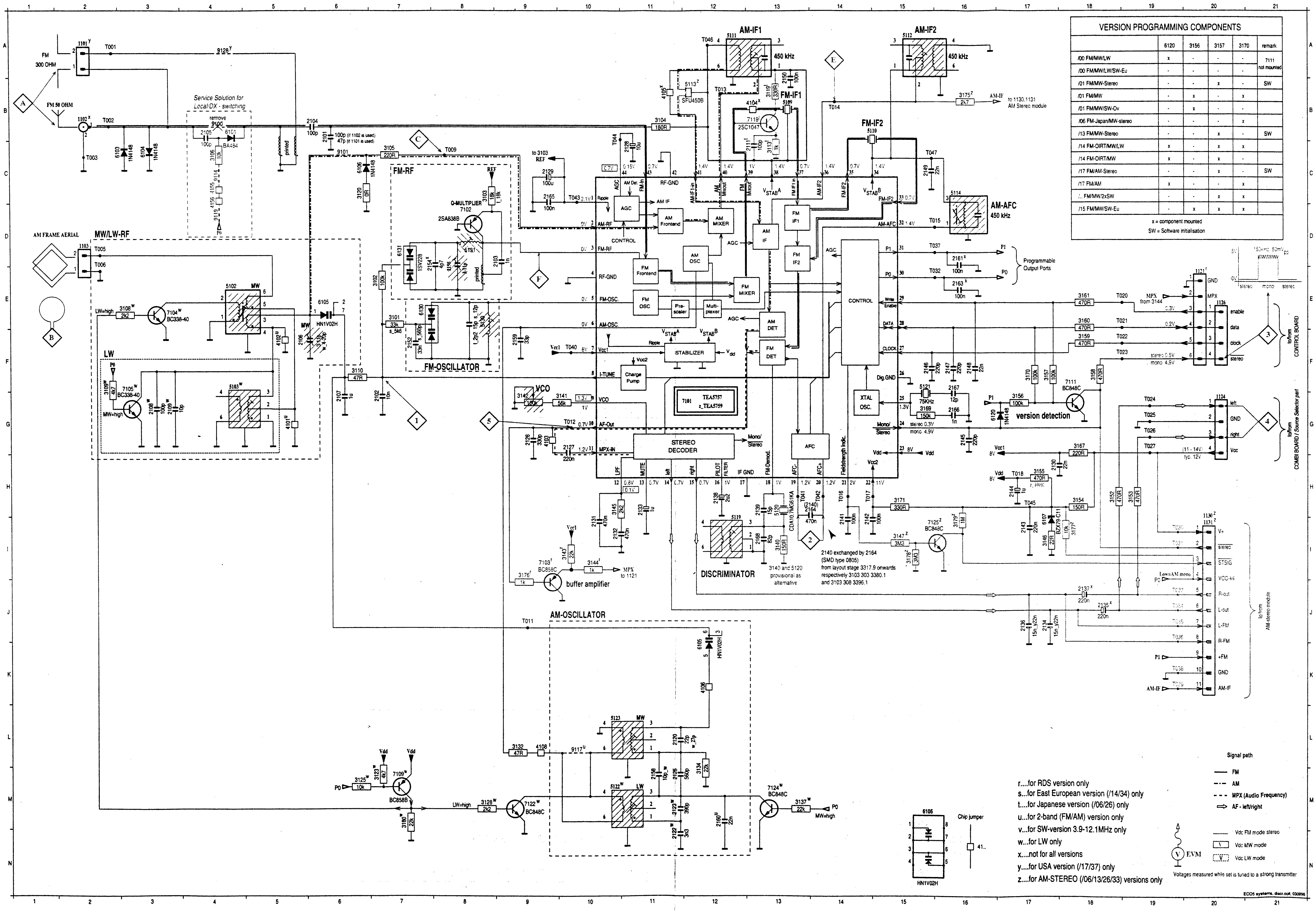

5
4
3
2
1
A
B
C
E
D
A
2
3
1
F
C
5
4
7101
C
A
C
B E
41..
Chip jumper
(not all items shown in schematic diagram)

marked components to be assembled as service solution for *Local/DX* - switching

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

ECO5 3396 stage 2 250698

TUNER BOARD ECO5 / Systems


FM 300 OHM
FM 50 OHM
1101
1102
T001
T002
T003
9128
Service Solution for Local/DX - switching
remove 9100
2105
6101
BA494
6103 1N4148
6104 1N4148
2104 100p
2101 100p (if 1102 is used) 47p (if 1101 is used)
9101
3105 220R
T009
AM FRAME AERIAL
1103
T005
T006
MW/LW-RF
5102 MW
3108 2k2
7104 BC338-40
LW=high
4102
LW
3109 4k7
7105 BC338-40
MW=high
5103
2108
2109
4101
6105 HN1V02H
3110 47R
2107 1u
2102 10n
6106 1N4148
3120 0R
FM-RF
Q-MULTIPLIER 7102 2SA838B
3103 18k
6131 1SV228
2154 47p
2103 1n
printed
3102 100k
3101 33k
6130
2152
FM-OSCILLATOR
2159 33p
to 3103 REF
2129 100u
2165 100n
T043
T044
2128 10u
Vcc1 T040
3142 100k
VCO
3141 56k
T012
2126 330p
4103
2127 220n
AGC
Ripple
AM-RF
FM-RF
RF-GND
FM-OSC
AM-OSC
Vcc1
I-TUNE
VCO
AF-Out
MPX-IN
AM Det
AM IF
AM Frontend
AM MIXER
CONTROL
AM OSC
AM IF
FM Frontend
FM OSC
Pre-scaler
Multi-plexer
FM MIXER
AM DET
FM IF1
FM IF2
FM DET
STABILIZER
Charge Pump
7101 TEA5757 z_TEA5759
STEREO DECODER
AFC
XTAL OSC.
Fieldstrength Indic.
LPF
MUTE
left
right
PILOT FILTER
IF GND
FM-Demod.
AFC-
AFC+
Dig.GND
Write Enable
DATA
CLOCK
P1
P0
Mono/Stereo
Vdd
Vcc2
AM-IF1
5111
450 kHz
2150 100n
AM-IF2
5112
450 kHz
5113 SFU450B
4105
T046
T013
4104
7119 2SC1047
3119 330R
3113 1k
2111 100p
FM-IF1
5109
FM-IF2
5110
T014
3175 2k7
AM-IF to 1130,1131 AM Stereo module
T047
2149 22n
5114
AM-AFC 450 kHz
T015
T037
2161 100n
T032
2163 100n
Programmable Output Ports
2146 220p
2147 220p
2148 22n
5121 75KHz
2167 12p
3169 150k
2166 1n
2145 220p
P1
3156 100k
6120 1N4148
version detection
3170 100k
3157 100k
7111 BC848C
3158 470R
3161 470R
3160 470R
3159 470R
T020
T021
T022
T023
MPX from 3144
1121
1126
GND
MPX
enable
data
clock
stereo
to/from CONTROL BOARD
150kHz, 50mVpp
5V
0V
stereo
mono
stereo
T024
T025
T026
T027
1124
left
GND
right
Vcc
to/from COMBI BOARD / Source Selector part
3167 220R
Vcc1 8V
Vdd 8V
T018
3155 470R
2130 22n
2144 1u
T045
3154 150R
3152 470R
3153 470R
2143 220n
6107 BZX79 C11
3146 22R
3177 10k
3171 330R
7125 BC848C
3179 1M
3147 3M3
3178 3M3
2141 100n
2142 100n
T016
T017
2138 2u2
5119
2139 15p
5120 CDA10.7MG51KA
2168 82p
3140 150R
T041
T042
2164 470n
2140 exchanged by 2164 (SMD type 0805) from layout stage 3317.9 onwards respectively 3103 303 3380.1 and 3103 308 3396.1
DISCRIMINATOR
3140 and 5120 provisional as alternative
2131 470n
3145 2k2
2132 470n
2133 1u
3143 22k
Vcc1
7103 BC858C
3144 1k
MPX to 1121
3176 1k
buffer amplifier
1130
1131
V+
stereo
STSIG
VCO-kill
R-out
L-out
L-FM
R-FM
+FM
GND
AM-IF
Low=AM mono
2137 220n
2135 220n
2136 15n
2134 15n
to/from AM-stereo module
P1
AM-IF
AM-OSCILLATOR
T011
6105 HN1V02H
4106
5123 MW
5122 LW
3132 47R
4108
9117
2120 22p
3134 22k
2158 100p
2126 560p
2123 390p
2122 3n3
2160 22n
7124 BC848C
3137 22k
P0
MW=high
Vdd
3125 10k
3127 4k7
7109 BC858B
3180 22k
LW=high
3128 2k2
7122 BC848C
6105
HN1V02H
Chip jumper
41..
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
A
B
C
D
E
F
G
H
I
J
K
L
M
N

VERSION PROGRAMMING COMPONENTS	6120	3156	3157	3170	remark
/00 FM/MW/LW	x	-	-	-	7111 not mounted
/00 FM/MW/LW/SW-Eu	-	-	-	-	
/01 FM/MW-Stereo	-	-	x	-	SW
/01 FM/MW	-	x	-	x	
/01 FM/MW/SW-Ov	-	x	-	-	
/06 FM-Japan/MW-stereo	-	-	-	x	
/13 FM/MW-Stereo	-	-	x	-	SW
/14 FM-OIRT/MW/LW	x	-	x	x	
/14 FM-OIRT/MW	x	-	x	-	
/17 FM/AM-Stereo	-	-	x	-	SW
/17 FM/AM	x	-	-	x	
/.. FM/MW/2xSW	-	-	x	x	
/15 FM/MW/SW-Eu	-	x	x	x	

x = component mounted

SW = Software initialisation

r....for RDS version only
s...for East European version (/14/34) only
t....for Japanese version (/06/26) only
u...for 2-band (FM/AM) version only
v...for SW-version 3.9-12.1MHz only
w...for LW only
x....not for all versions
y....for USA version (/17/37) only
z....for AM-STEREO (/06/13/26/33) versions only

Signal path

— FM
-·- AM
- - - MPX (Audio Frequency)
⇨ AF - left/right

EVM

······ Vdc FM mode stereo
V Vdc MW mode
V Vdc LW mode

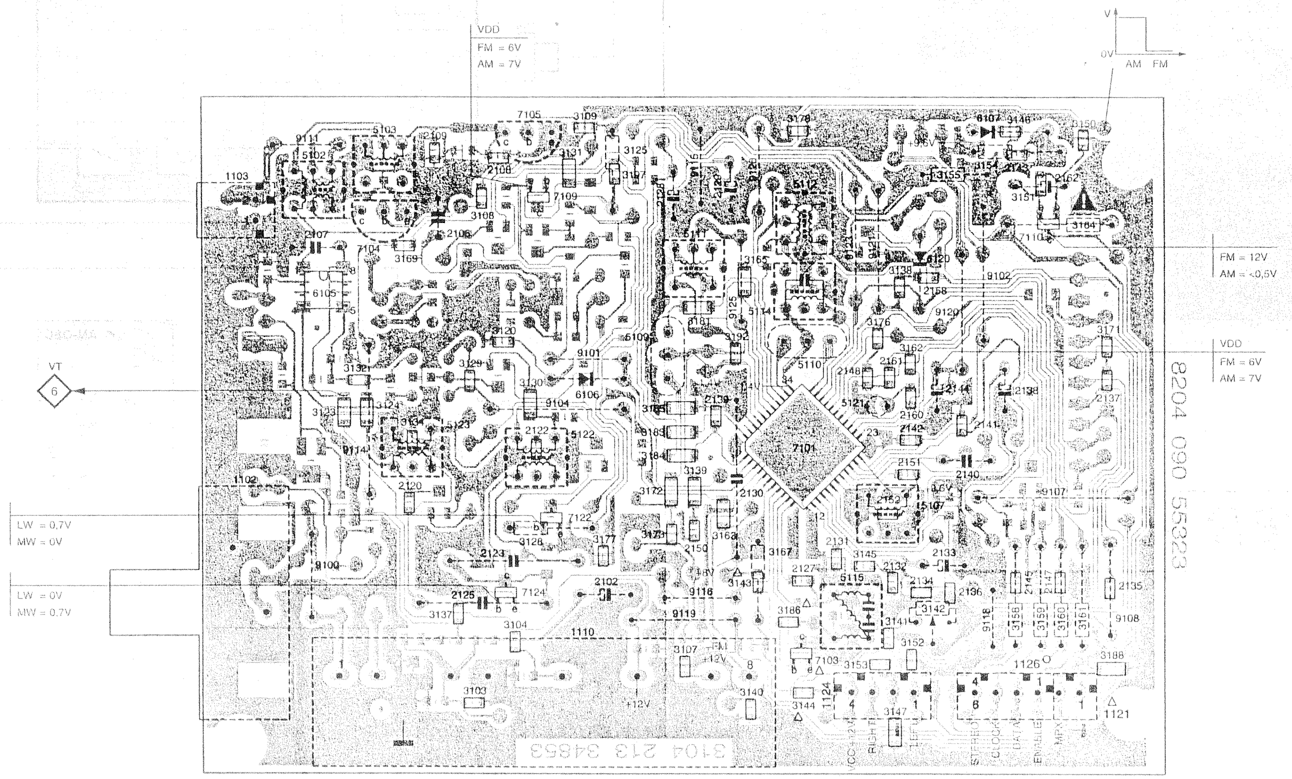
Voltages measured while set is tuned to a strong transmitter

ECO5 systems, discr.coll, 030998

1101	A 1
1102	B 2
1103	D 2
1121	E20
1124	G20
1126	E20
1130	I20
1131	I20
2101	C 6
2102	G 7
2103	D 9
2104	B 6
2106	F 5
2107	G 6
2108	G 3
2109	G 3
2111	C13
2120	L11
2122	N11
2123	M11
2125	M11
2126	G 9
2127	G10
2128	C11
2129	C 9
2130	H17
2131	I10
2132	I10
2133	H11
2134	J17
2135	J18
2136	J17
2137	J18
2138	H12
2139	H13
2140	H14
2141	H14
2142	H14
2143	I17
2144	H17
2145	G16
2146	F15
2147	F16
2148	F16
2149	C15
2150	B13
2152	F 7
2153	E 8
2154	E 7
2155	D 8
2158	M11
2159	F 9
2160	M12
2161	D16
2163	E16
2164	H14
2165	C 9
2166	G16
2167	F16
2168	I 13
3101	E 7
3102	E 7
3103	C 8
3104	B11
3105	C 7
3108	E 3
3109	F 2
3110	F 6
3113	C13
3119	B13
3120	C 6
3123	M 7
3125	M 6
3128	M 8
3132	L 9
3134	M12
3137	M13
3140	I13
3141	G10
3142	G 9
3143	I10
3144	I10
3145	H10
3146	I17
3147	I15
3152	H18
3153	H19
3154	H18
3155	H17
3156	G17
3157	F17
3158	F18
3159	F18
3160	E18
3161	E18
3167	G18
3169	G15
3170	F17
3171	H15
3175	B16
3176	J 9
3177	I18
3178	I15
3179	I16
3180	M7
4101	G 5
4102	F 5
4103	G 9
4104	B13
4105	B11
4106	K12
4108	L 9
5102	E 4
5103	F 4
5109	B13
5110	B14
5111	A13
5112	A15
5113	B12
5114	C16
5119	I 12
5120	H13
5121	F15
5122	M11
5123	L11
5130	E 8
5131	D 8
6103	C 2
6104	C 3
6105	K12
6105	E 6
6106	C 6
6107	H17
6120	G16
6130	E 7
6131	D 7
7101	G11
7102	D 8
7103	I 9
7104	E 3
7105	F 2
7109	M 7
7111	F18
7119	B13
7122	M 9
7124	M13
7125	I16
9100	B 4
9101	C 6
9117	L10
9128	A 4

1102	F4	2107	C4	2128	C7	2136	G10	2144	E10	2160	E9	3120	D6	3132	E5	3143	G8	3153	G9	3163	F8	3176	D9	3188	G11	5111	C8	6106	E7	7110	D11	9108	G11	9121	D9
1103	C4	2108	C6	2129	C8	2137	E11	2145	G11	2161	E9	3123	E4	3134	E5	3144	H9	3154	C10	3164	C11	3177	F7	3192	D8	5112	C9	6107	B10	7122	F7	9111	C4	9123	D9
1110	G7	2109	C5	2130	F8	2138	E10	2147	G11	2162	C11	3124	E5	3137	G5	3145	F9	3155	C10	3165	D8	3178	B8	3197	C7	5114	D8	6120	D10	7124	G6	9114	E5	9125	D8
1121	H11	2120	F5	2131	F9	2139	E8	2148	E9	3103	H6	3125	C7	3138	D9	3146	B10	3158	G11	3167	F8	3181	D8	5102	C4	5115	G9	7101	E9	9100	F4	9115	C8	9126	C8
1124	H9	2122	E6	2132	F9	2140	F10	2150	F8	3104	G6	3128	F6	3139	F8	3147	H9	3159	G11	3169	D5	3183	E7	5103	C5	5121	E9	7103	G9	9101	E7	9116	G8		
1126	G10	2123	F6	2133	F10	2141	E10	2151	F9	3107	G7	3129	E6	3140	H8	3150	C11	3160	G11	3171	D11	3184	E7	5107	F10	5122	E7	7104	D5	9102	D10	9118	G10		
2102	G7	2125	G6	2134	G10	2142	E9	2152	F9	3108	C6	3130	E6	3141	G9	3151	C10	3161	G11	3172	F7	3185	E7	5109	D7	5123	E5	7105	B6	9104	E6	9119	G7		
2106	C5	2127	F9	2135	G11	2143	C10	2158	D10	3109	B7	3131	C6	3142	G10	3152	G9	3162	D9	3173	F7	3186	G8	5110	E9	6105	D4	7109	C6	9107	F11	9120	D10		

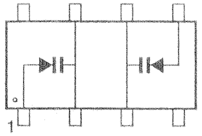
TUNER 95 bis Combi: Copper side view

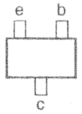

VDD
FM = 6V
AM = 7V
V
0V
AM FM
FM = 12V
AM = <0,5V
VDD
FM = 6V
AM = 7V
VT
6
LW = 0,7V
MW = 0V
LW = 0V
MW = 0,7V
8204 090 55323
3104 213 34853
7101
6105
1103
1102
1110
1124
1126
1121
VCC+12V
RIGHT
LEFT
STEREO
CLOCK
DATA
ENABLE
MPX

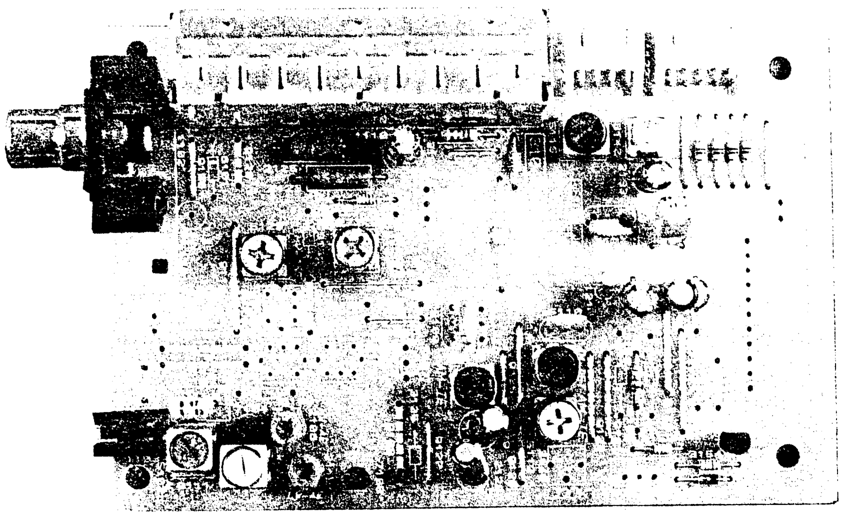
△ only in RDS version (04121)

○ not in RDS version (04341)

IC 6105





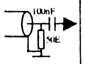


TUNER 95 BOARD

TABLE OF CONTENTS

Blockdiagram 7D-1
Adjustmant table 7D-2
Component layout....................7D-2
Circuit diagram....................7D-3
Partslist 7D-4

TUNER 95 bis Adjustment Table (FM, MW, LW with Frame antenna)

Waverange	Input frequency	Input	Set tuned to	Adjust	Output	Scope / Voltmeter
VARICAP ALIGNMENT						
FM (50)			108 MHz	check	◇6	7 ... 9V
87.5 - 108 MHz			87.5 MHz	check		1.3 ... 2V
MW (9)			1602 kHz	5123		8.3V ± 0.2V
531 - 1602 kHz			531 kHz	check		1V ± 0.4V
LW (3)			279 kHz	5122		8.3V ± 0.2V
153 - 279 kHz			153 kHz	check		1V ± 0.4V
FM - DETECTION						
FM	98 MHz 1mV continuous wave ***short pin 21 (IC7101) to ground***	◇A	98 MHz	5107	◇1 ◇2	0mV ± 3mV
FM - VCO						
FM	98 MHz 1 mV continuous wave	◇A	98 MHz	3142	◇3	152kHz ± 1 kHz
DISTORTION						
FM	98 MHz 1 mV 90 % L + 9 % pilot mod = 1kHz	◇A	98MHz	mixcoil inside Tuner 1110	◇4	Distortion minimum
AM - IF						
MW	450kHz Δf = 10kHz Low as possible Swept signal	 ◇C	MW	5111	◇7	symmetrical and max. height ↕
				5112		
	450kHz continuous wave			5114	◇1 ◇2	0mV ± 2mV
AM - RF						
MW	558kHz Mod = 1kHz 30 % AM	◇B *	558kHz	5102	◇7	MAX ↕
	1494 kHz		1494kHz	2106		
LW	198kHz mod = 1kHz 30 % AM		198kHz	5103		MAX

adjtable for 3104 217 04121/04341

* Signal send via a frame antenna
(..) = tuning grid in kHz

↕ repeat

MISCELLANEOUS

1101	4822 267 31505	Antenna Socket 300R	
1102	4822 267 10283	Antenna Socket Coax IEC 75R	

CAPACITORS

2101	5322 122 32531	100pF 5% 50V	
2101	4822 126 13692	47pF 1% 63V	for USA
2102	4822 122 33177	10nF 20% 50V	
2103	5322 122 34123	1nF 10% 50V	
2104	4822 122 33195	100pF 10% 50V	
2106	4822 125 50355	Trimmer 4-20pF	for LW version
2106	4822 125 60101	Trimmer 3-11pF 100V	
2107	4822 121 51319	1µF 10% 63V	
2108	5322 122 32531	100pF 5% 50V	for LW version
2109	5322 122 32448	10pF 5% 50V	for LW version
2120	4822 126 13691	27pF 1% 63V	for LW version
2120	5322 122 32658	22pF 5% 50V	
2122	4822 122 33891	3,3nF 10% 63V	for LW version
2125	4822 121 51381	560pF 5% 400V	
2126	5322 122 31863	330pF 5% 50V	
2127	4822 126 13473	220nF +80/-20% 50V	
2128	4822 124 41579	10µF 20% 50V	
2129	4822 124 41584	100µF 20% 10V	
2130	4822 126 11585	22nF+80/- 20% 25V	
2131	4822 122 33325	470nF 16V	
2132	4822 122 33325	470nF 16V	
2131	4822 126 13482	470nF +80/- 20% 16V	
2132	4822 126 13482	470nF +80/- 20% 16V	
2133	4822 124 40242	1µF 20% 63V	
2134	4822 126 13188	15nF 5% 63V	
2134	5322 122 32654	22nF 10% 63V	for USA
2135	4822 124 40746	0,22µF 20% 63V	
2136	4822 126 13188	15nF 5% 63V	
2136	5322 122 32654	22nF 10% 63V	for USA
2137	4822 124 40746	0,22µF 20% 63V	
2138	4822 124 41576	2,2µF 20% 50V	
2139	4822 126 14236	50V 15pF 5%	
2140	4822 121 51252	470nF 5% 63V	
2141	4822 126 10002	100nF 20% 25V	
2142	4822 126 10002	100nF 20% 25V	
2143	4822 126 13473	220nF +80/-20% 50V	
2144	4822 124 40242	1µF 20% 63V	
2145	4822 122 33575	220pF 5% 50V	
2146	4822 122 33575	220pF 5% 50V	
2147	4822 122 33575	220pF 5% 50V	
2148	4822 126 11585	22nF+80/- 20% 25V	
2149	5322 122 32654	22nF 10% 63V	
2150	4822 122 31947	100nF 20% 63V	
2152	5322 116 80853	560pF 5% 63V	for East. Europe
2152	4822 126 12105	33nF 5% 63V	
2153	**4822 122 32139**	**12pF 2% 63V**	**for East. Europe**
2153	4822 122 32504	15pF 2% 63V	
2155	4822 125 60101	Trimmer 3-11pF 100V	
2158	5322 122 32448	10pF 5% 50V	for LW version
2159	5322 122 32659	33pF 5% 50V	
2160	5322 122 32654	22nF 10% 63V	
2161	4822 126 10002	100nF 20% 25V	
2163	4822 126 10002	100nF 20% 25V	
2164	4822 126 13482	470nF +80/- 20% 16V	
2165	4822 126 10002	100nF 20% 25V	
2166	5322 122 34123	1nF 10% 50V	
2167	4822 122 32139	12pF 2% 63V	
2168	4822 126 13695	82pF 1% 63V	

RESISTORS

3101	4822 051 20562	5k6 5% 0,1W	for East. Europe
3101	4822 051 20333	33k 5% 0,1W	
3102	4822 051 20104	100k 5% 0,1W	
3103	4822 117 10965	18k 1% 0,1W	
3104	4822 117 11448	180R 1% 0,1W	
3105	4822 116 83872	220R 5% 0,5W	
3108	4822 117 11449	2k2 1% 0,1W	for LW version
3109	4822 051 20472	4k7 5% 0,1W	for LW version
3110	4822 116 52195	47R 5% 0,5W	
3120	4822 051 20008	0R Jumper 0805	
3123	4822 051 20472	4k7 5% 0,1W	for LW version
3125	4822 117 10833	10k 1% 0,1W	for LW version
3128	4822 117 11449	2k2 1% 0,1W	for LW version
3132	4822 116 52195	47R 5% 0,5W	
3134	4822 051 20223	22k 5% 0,1W	
3137	4822 051 20223	22k 5% 0,1W	for LW version
3140	4822 051 20008	0R Jumper 0805	
		5120=CDA10.7MG40K	
3140	4822 117 10353	150R 1% 0,1W	
		5120=CDA10.7MG61KA	
3141	4822 051 20563	56k 5% 0,1W	
3142	4822 100 11163	Trimmer 100k 30% 0,1W	
3143	4822 051 20223	22k 5% 0,1W	for RDS version
3144	4822 051 10102	1k 2% 0,25W	for RDS version
3145	4822 117 11449	2k2 1% 0,1W	
3146	4822 051 20229	22R 5% 0,1W	
3152	4822 116 83883	470R 5% 0,5W	
3153	4822 051 20471	470R 5% 0,1W	
3154	4822 116 83868	150R 5% 0,5W	
3155	4822 051 20471	470R 5% 0,1W	
3156	4822 051 20104	100k 5% 0,1W	for /21/30/33 only
3157	4822 116 52234	100k 5% 0,5W	for East. Europe
3158	4822 116 83883	470R 5% 0,5W	
3159	4822 116 83883	470R 5% 0,5W	
3160	4822 116 83883	470R 5% 0,5W	
3161	4822 116 83883	470R 5% 0,5W	
3167	4822 117 11503	220R 1% 0.1W	
3169	4822 051 20154	150k 5% 0,1W	
3170	4822 116 52234	100k 5% 0,5W	
3171	4822 116 52219	330R 5% 0,5W	
3176	4822 051 10102	1k 2% 0,25W	for RDS version
3180	4822 051 20223	22k 5% 0,1W	for LW version
4101	4822 051 20008	0R Jumper 0805	for 2-Band only
4102	4822 051 20008	0R Jumper 0805	for 2-Band only
4103	4822 051 20008	0R Jumper 0805	
4104	4822 051 20008	0R Jumper 0805	
4105	4822 051 20008	0R Jumper 0805	
4106	4822 051 20008	0R Jumper 0805	
4108	4822 051 20008	0R Jumper 0805	
4111	4822 051 20008	0R Jumper 0805	
4120	4822 051 20008	0R Jumper 0805	
4150	4822 051 10008	0R Jumper 1206	
4151	4822 051 20008	0R Jumper 0805	
4152	4822 051 10008	0R Jumper 1206	
4153	4822 051 10008	0R Jumper 1206	
4154	4822 051 10008	0R Jumper 1206	
4155	4822 051 10008	0R Jumper 1206	
4156	4822 051 20008	0R Jumper 0805	
4157	4822 051 10008	0R Jumper 1206	
4158	4822 051 10008	0R Jumper 1206	
4159	4822 051 10008	0R Jumper 1206	
4162	4822 051 10008	0R Jumper 1206	

COILS & FILTERS

5102	4822 157 71634	MW RF Coil	
5103	4822 157 71635	LW RF Coil	for LW version
5109	4822 242 70665	Ceram Filter 10,7MHz	
5110	4822 242 70665	Ceram Filter 10,7MHz	
5111	4822 158 60511	AM-IF Filter 450kHz	
5112	4822 157 70302	AM-IF Filter 450kHz	
5114	4822 157 70302	AM-IF Filter 450kHz	
5119	4822 157 11443	Discriminator 10,7MHz	
5120	4822 242 82065	Cer. Disc. 10,7MG40K	
5120	4822 242 10251	Cer. Disc.10,7MG61KA-TF21	
5121	4822 242 10261	Quartz 75kHz	
5122	4822 157 60517	Osc. Coil LW	for LW version
5123	4822 157 60517	Osc. Coil MW	
5130	4822 156 30947	RF-Coil 1.5T	
5131	4822 156 30947	RF-Coil 1.5T	

DIODES

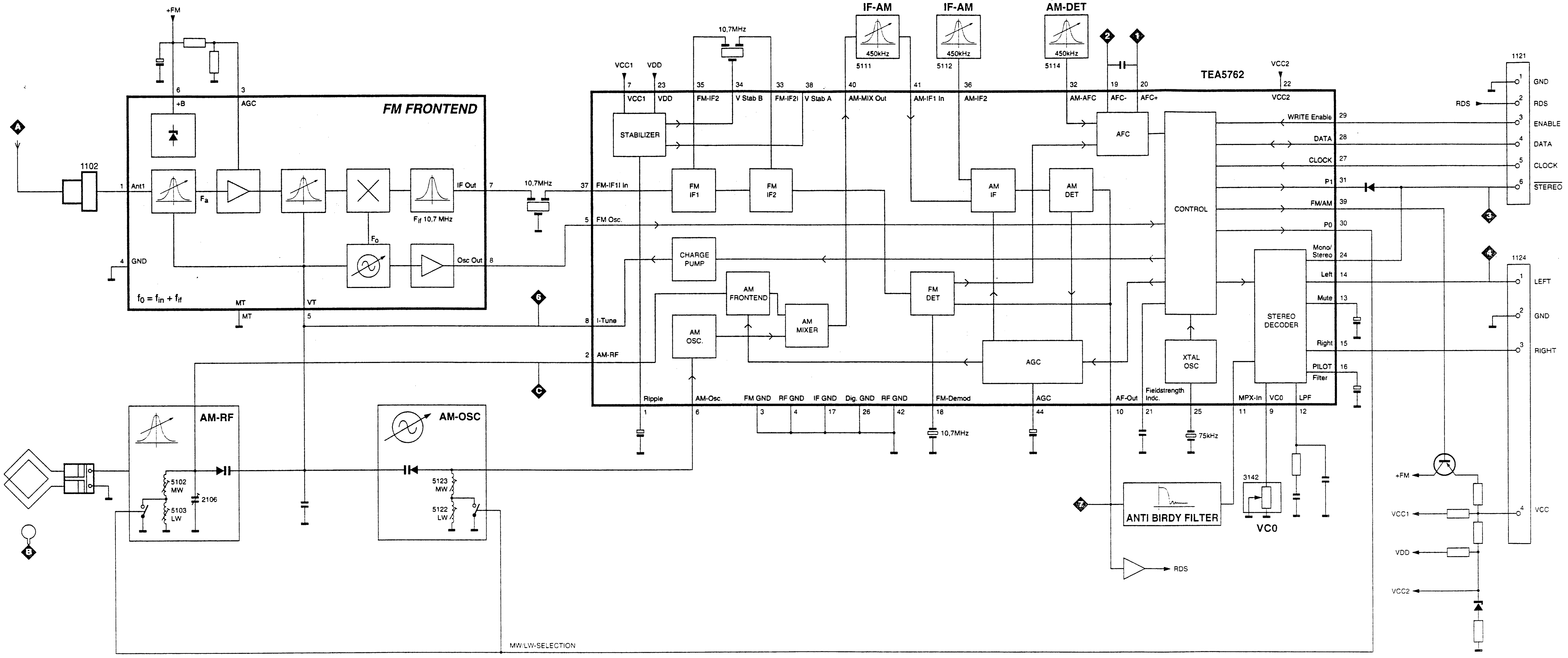
6103	4822 130 30621	1N4148	
6104	4822 130 30621	1N4148	
6105	4822 130 83075	HN1V02H-B	
6106	4822 130 30621	1N4148	
6107	4822 130 34488	BZX79-B11	
6120	4822 130 30621	1N4148	not for /21/30/33
6130	4822 130 82833	1SV228	
6131	4822 130 82833	1SV228	

TRANSISTORS & INTEGRATED CIRCUITS

7101	4822 209 90924	TEA5757H/V1	
7102	4822 130 60093	2SA838B	
7103	4822 130 42513	BC858C	for RDS version
7104	5322 130 44779	BC338-40	for LW version
7105	5322 130 44779	BC338-40	for LW version
7109	5322 130 41983	BC858B	for LW version
7111	5322 130 42136	BC848C	
7122	5322 130 42136	BC848C	for LW version
7124	5322 130 42136	BC848C	for LW version

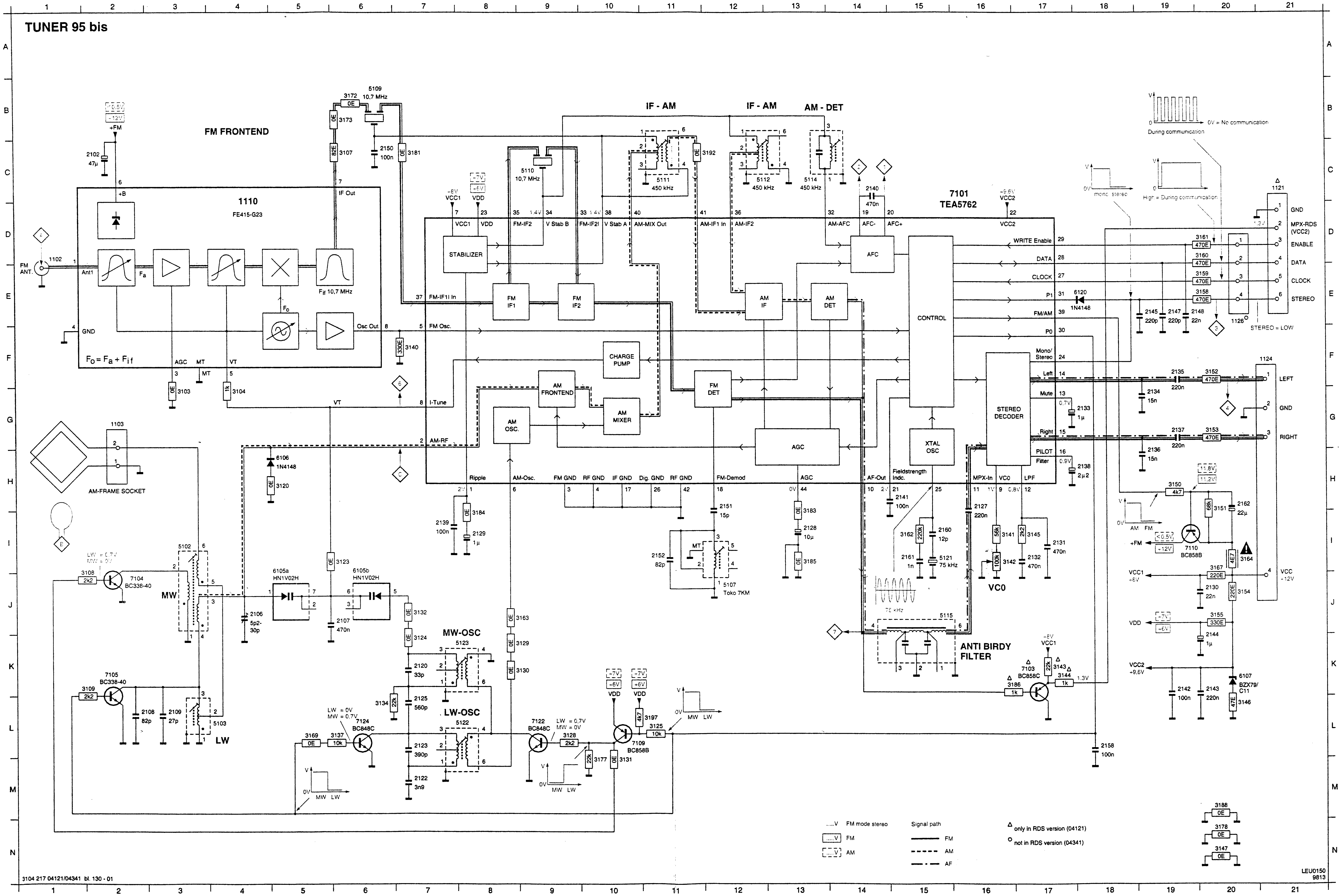
Note: Only the parts mentioned in this list are normal service spare parts.

BLOCKDIAGRAM


+FM
6
3
+B
AGC
FM FRONTEND
A
1102
1
Ant1
F_a
IF Out
7
F_{if} 10,7 MHz
F_0
4
GND
Osc Out
8
$f_0 = f_{in} + f_{if}$
MT
VT
MT
5
10,7MHz
6
C
AM-RF
5102
MW
5103
LW
2106
AM-OSC
5123
MW
5122
LW
B
MW/LW-SELECTION
10,7MHz
VCC1
VDD
IF-AM
450kHz
5111
IF-AM
450kHz
5112
AM-DET
450kHz
5114
2
1
TEA5762
VCC2
7
23
35
34
33
38
40
41
36
32
19
20
22
VCC1
VDD
FM-IF2
V Stab B
FM-IF2i
V Stab A
AM-MIX Out
AM-IF1 In
AM-IF2
AM-AFC
AFC-
AFC+
VCC2
STABILIZER
AFC
37
FM-IF1I In
FM IF1
FM IF2
AM IF
AM DET
CONTROL
5
FM Osc.
CHARGE PUMP
AM FRONTEND
AM MIXER
FM DET
8
I-Tune
AM OSC.
2
AM-RF
AGC
XTAL OSC
STEREO DECODER
WRITE Enable
29
DATA
28
CLOCK
27
P1
31
FM/AM
39
P0
30
Mono/ Stereo
24
Left
14
Mute
13
Right
15
PILOT Filter
16
Ripple
AM-Osc.
FM GND
RF GND
IF GND
Dig. GND
RF GND
FM-Demod
AGC
AF-Out
Fieldstrength Indc.
MPX-In
VCO
LPF
1
6
3
4
17
26
42
18
10,7MHz
44
10
21
25
75kHz
11
9
12
3142
7
ANTI BIRDY FILTER
VCO
RDS
1121
1
GND
RDS
2
RDS
3
ENABLE
4
DATA
5
CLOCK
6
STEREO
3
4
1124
1
LEFT
2
GND
3
RIGHT
+FM
VCC1
4
VCC
VDD
VCC2

1102	D1
1103	G2
1110	D4
1121	C21
1124	F21
1126	E20
2102	C2
2106	J4
2107	J6
2108	L2
2109	L3
2120	K7
2122	M7
2123	L7
2125	L7
2127	H16
2128	I13
2129	I8
2130	J20
2131	I17
2132	I17
2133	G18
2134	G19
2135	F19
2136	H19
2137	G19
2138	H18
2139	I7
2140	C14
2141	H15
2142	K19
2143	K20
2144	K20
2145	E19
2147	E19
2148	E19
2150	C6
2151	H12
2152	I11
2158	L18
2160	I15
2161	I15
2162	H20
3103	G3
3104	G4
3107	C6
3108	J1
3109	K1
3120	H5
3123	I6
3124	K7
3125	L11
3128	L9
3129	K8
3130	K8
3131	M10
3132	J7
3134	L6
3137	L5
3140	F7
3141	I16
3142	I16
3143	K17
3144	K17
3145	I17
3146	L20
3147	N20
3150	H19
3151	I20
3152	F20
3153	G20
3154	J20
3155	J20
3158	E19
3159	E19
3160	D19
3161	D19
3162	I15
3163	J8
3164	I20
3167	I20
3169	L5
3172	B6
3173	B6
3177	M10
3178	N20
3181	C7
3183	I13
3184	I8
3185	I13
3186	K16
3188	M20
3192	C12
3197	L11
5102	I3
5103	L4
5107	J12
5109	B6
5110	C9
5111	C11
5112	C12
5114	C13
5115	J15
5121	I15
5122	L7
5123	K7
6105a	I5
6105b	I6
6106	H5
6107	K20
6120	E17
7101	C15
7103	K17
7104	J2
7105	K2
7109	L10
7110	I19
7122	L9
7124	L6

TUNER 95 bis


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
A B C D E F G H I J K L M N
FM FRONTEND
1110
FE415-G23
+B
Ant1
Fa
Fo
Fif 10,7 MHz
IF Out
Osc Out
GND
AGC
MT
VT
Fo = Fa + Fif
FM ANT.
1102
+0,5V
-12V
+FM
2102 47µ
3103 0E
3104 1k
5109 10,7 MHz
3172 0E
3173 0E
3107 82E
2150 100n
3181 0E
3140 330E
5110 10,7 MHz
IF - AM
IF - AM
AM - DET
5111 450 kHz
5112 450 kHz
5114 450 kHz
3192 0E
2140 470n
7101
TEA5762
VCC1
VDD
VCC2
FM-IF2
V Stab B
FM-IF2I
V Stab A
AM-MIX Out
AM-IF1 In
AM-IF2
AM-AFC
AFC-
AFC+
STABILIZER
FM-IF1 In
FM Osc.
I-Tune
AM-RF
FM IF1
FM IF2
AM IF
AM DET
AFC
CONTROL
CHARGE PUMP
AM FRONTEND
AM MIXER
AM OSC.
FM DET
AGC
XTAL OSC
STEREO DECODER
WRITE Enable
DATA
CLOCK
P1
FM/AM
P0
Mono/Stereo
Left
Mute
Right
PILOT Filter
Ripple
AM-Osc.
FM GND
RF GND
IF GND
Dig. GND
RF GND
FM-Demod
AF-Out
Fieldstrength Indc.
MPX-In
VCO
LPF
6120 1N4148
2145 220p
2147 220p
2148 22n
3161 470E
3160 470E
3159 470E
3158 470E
1121
GND
MPX-RDS (VCC2)
ENABLE
DATA
CLOCK
STEREO
1126
STEREO = LOW
0V = No communication
During communication
High = During communication
mono stereo
1124
LEFT
GND
RIGHT
2135 220n
3152 470E
2134 15n
2133 1µ
2137 220n
3153 470E
2136 15n
2138 2µ2
1103
AM-FRAME SOCKET
6106 1N4148
3120 0E
VT
2139 100n
3184 0E
2129 1µ
2151 15p
2152 82p
5107 Toko 7KM
3183 0E
2128 10µ
3185 0E
2141 100n
2127 220n
3162 220k
2160 12p
2161 1n
5121 75 kHz
3141 56k
3142 100k
3145 2k2
2132 470n
2131 470n
VCO
75 kHz
5115
ANTI BIRDY FILTER
5102
MW
LW = 0,7V
MW = 0V
3108 2k2
7104 BC338-40
2106 5p2-30p
6105a HN1V02H
6105b HN1V02H
3123 0E
2107 470n
3132 0E
3124 0E
MW-OSC
5123
2120 33p
3134 22k
2125 560p
LW-OSC
5122
2123 390p
2122 3n9
3163 0E
3129 0E
3130 0E
7105 BC338-40
3109 2k2
2108 82p
2109 27p
5103
LW
3169 0E
3137 10k
7124 BC848C
LW = 0V
MW = 0,7V
7122 BC848C
LW = 0,7V
MW = 0V
3128 2k2
3177 22k
3131 0E
-7V
+6V
VDD
3197 4k7
3125 10k
7109 BC858B
MW LW
2158 100n
7103 BC858C
3186 1k
3143 22k
3144 1k
VCC1
1,3V
3150 4k7
3151 68k
2162 22µ
7110 BC858B
+FM
<0,5V
+12V
AM FM
3164 4E7
3167 220E
3154 220E
VCC1 -6V
2130 22n
VCC -12V
3155 330E
VDD
2144 1µ
VCC2 +9,6V
2142 100n
2143 220n
6107 BZX79/C11
3146 47E
3188 0E
3178 0E
3147 0E

....V FM mode stereo

Signal path

....V	FM
....V	AM

———	FM
- - - -	AM
—·—·	AF

Δ only in RDS version (04121)

○ not in RDS version (04341)

ELECTRICAL PARTS LIST - TUNER 95 BOARD

MISCELLANEOUS

1102	4822 267 10283	Socket Coaxial IEC 75R
1103	4822 265 31184	JST Connector 2 pin
1110	4822 210 10739	Frontend Assembly FE415-G23

CAPACITORS

2102	4822 124 40433	47µF 20% 25V
2106	4822 125 60102	Trimmer 5,2-30pF 100V
2107	4822 121 51252	470nF 5% 63V
2108	4822 126 13695	82pF 1% 63V
2109	4822 126 13691	27pF 1% 63V
2120	5322 122 32659	33pF 5% 50V
2122	5322 126 10465	3,9nF 10% 50V
2123	4822 121 10766	390pF 1% 630V
2125	4822 121 10578	560pF 1% 630V
2127	4822 122 32927	220nF +80/-20% 50V
2128	4822 124 41579	10µF 20% 50V
2129	4822 124 40242	1µF 20% 63V
2130	4822 126 11585	22nF +80/-20% 25V
2131	4822 122 33325	470nF 16V
2132	4822 122 33325	470nF 16V
2133	4822 124 40242	1µF 20% 63V
2134	4822 126 13188	15nF 5% 63V
2135	4822 122 32927	220nF +80/-20% 50V
2136	4822 126 13188	15nF 5% 63V
2137	4822 122 32927	220nF +80/-20% 50V
2138	4822 124 41576	2,2µF 20% 50V
2139	4822 126 10002	100nF 20% 25V
2140	4822 121 51252	470nF 5% 63V
2141	4822 122 31947	100nF 20% 63V
2142	4822 122 31947	100nF 20% 63V
2143	4822 122 32927	220nF +80/-20% 50V
2144	4822 124 40242	1µF 20% 63V
2145	4822 122 33575	220pF 5% 50V
2147	4822 122 33575	220pF 5% 50V
2148	4822 122 33809	22nF 20% 50V
2150	4822 122 31947	100nF 20% 63V
2151	4822 126 14236	15pF 5% 50V
2152	4822 126 13695	82pF 1% 63V
2158	4822 122 31947	100nF 20% 63V
2160	4822 122 32139	12pF 2% 63V
2161	5322 122 34123	1nF 10% 50V
2162	4822 124 81151	22µF 50V

RESISTORS

3103	4822 051 20008	0R Jumper 0805
3104	4822 051 10102	1k 2% 0,25W
3107	4822 051 20829	82R 5% 0,1W
3108	4822 117 11449	2k2 1% 0,1W
3109	4822 117 11449	2k2 1% 0,1W
3120	4822 051 20008	0R Jumper 0805
3123	4822 051 10008	0R Jumper 1206
3124	4822 051 10008	0R Jumper 1206
3125	4822 116 83864	10k 5% 0,5W
3128	4822 116 52256	2k2 5% 0,5W
3129	4822 051 20008	0R Jumper 0805
3130	4822 051 10008	0R Jumper 1206
3131	4822 051 10008	0R Jumper 1206
3132	4822 051 20008	0R Jumper 0805
3134	4822 051 20223	22k 5% 0,1W
3137	4822 117 10833	10k 1% 0,1W
3138	4822 051 20008	0R Jumper 0805
3139	4822 051 10008	0R Jumper 1206
3140	4822 051 20331	330R 5% 0,1W
3141	4822 117 11148	56k 1% 0,1W
3142	4822 100 11163	Trimmer 100k 30% 0,1W
3143	4822 051 20223	22k 5% 0,1W
3144	4822 051 10102	1k 2% 0,25W
3145	4822 117 11449	2k2 1% 0,1W
3146	4822 051 20479	47R 5% 0,1W
3147	4822 051 10008	0R Jumper 1206
3150	4822 051 20472	4k7 5% 0,1W
3151	4822 051 20683	68k 5% 0,1W
3152	4822 051 20471	470R 5% 0,1W
3153	4822 051 20471	470R 5% 0,1W
3154	4822 116 83872	220R 5% 0,5W
3155	4822 116 52219	330R 5% 0,5W
3158	4822 116 83883	470R 5% 0,5W
3159	4822 116 83883	470R 5% 0,5W
3160	4822 116 83883	470R 5% 0,5W
3161	4822 116 83883	470R 5% 0,5W
3162	4822 117 13579	220k 1% 0,1W
3163	4822 051 10008	0R Jumper 1206
3164	4822 052 10478 ⚠	4R7 5% 0,33W
3165	4822 051 10008	0R Jumper 1206
3167	4822 116 83872	220R 5% 0,5W
3169	4822 051 20008	0R Jumper 0805
3171	4822 051 20008	0R Jumper 0805
3172	4822 051 10008	0R Jumper 1206
3173	4822 051 20008	0R Jumper 0805
3176	4822 051 20008	0R Jumper 0805
3177	4822 051 20223	22k 5% 0,1W
3178	4822 051 10008	0R Jumper 1206
3181	4822 051 10008	0R Jumper 1206
3183	4822 051 10008	0R Jumper 1206
3184	4822 051 10008	0R Jumper 1206
3185	4822 051 10008	0R Jumper 1206
3186	4822 051 10102	1k 2% 0,25W
3188	4822 051 10008	0R Jumper 1206
3192	4822 051 20008	0R Jumper 0805
3197	4822 051 20472	4k7 5% 0,1W

COILS & FILTERS

5102	4822 157 71634	MW Aerial
5103	4822 157 71635	LW Aerial
5107	4822 157 11443	FM Discriminator 10,7MHz
5109	4822 157 71639	Ceram Filter 10,7MHz
5110	4822 242 70665	Ceram Filter 10,7MHz
5111	4822 158 60511	AM-IF Filter 450kHz
5112	4822 157 70302	AM-IF Filter 450kHz
5114	4822 157 70302	AM_IF Filter 450kHz
5115	4822 157 71636	Anti-Birdy Filter
5121	4822 242 10261	X'tal Resonator 75kHZ
5122	4822 157 60517	RF Coil AM
5123	4822 157 60517	RF Coil AM

DIODES

6105	4822 130 83075	HN1V02H-B
6106	4822 130 30621	1N4148
6107	4822 130 34488	BZX79-C11
6120	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1
7103	4822 130 42513	BC858C
7104	5322 130 44779	BC338-40
7105	5322 130 44779	BC338-40
7109	5322 130 41983	BC858B
7110	5322 130 41983	BC858B
7122	5322 130 42136	BC848C
7124	5322 130 42136	BC848C

Note : Only the parts mentioned in this list are normal service spare parts.

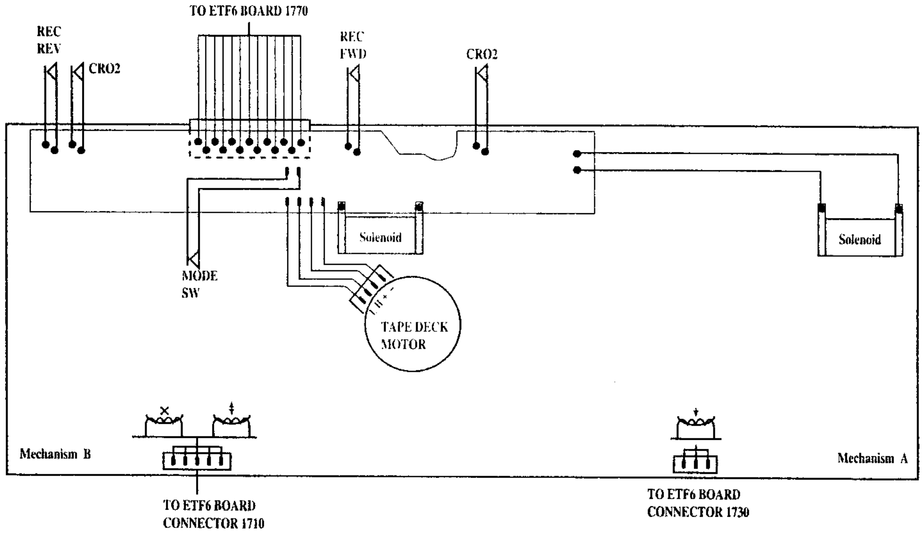
ETF6 TAPE MODULE

(Non-dolby Version)

TABLE OF CONTENTS

Tape Module Wiring & variation table 9-1
Block diagram 9-2
Brief Introduction 9-3
Connector assignment 9-4
Tape adjustments & Tape deck electronics 9-5
ETF6 Non-dolby board layouts 9-6
Analog Circuit diagram 9-7
Servo Circuit diagram 9-8
Exploded views & parts list 9-9
Electrical parts list 9-12

Tapedeck wiring (Double deck)



TO ETF6 BOARD 1770
REC REV
CRO2
REC FWD
CRO2
Solenoid
Solenoid
MODE SW
TAPE DECK MOTOR
Mechanism B
Mechanism A
TO ETF6 BOARD CONNECTOR 1710
TO ETF6 BOARD CONNECTOR 1730

OPTIONS / VARIANTS TABLE

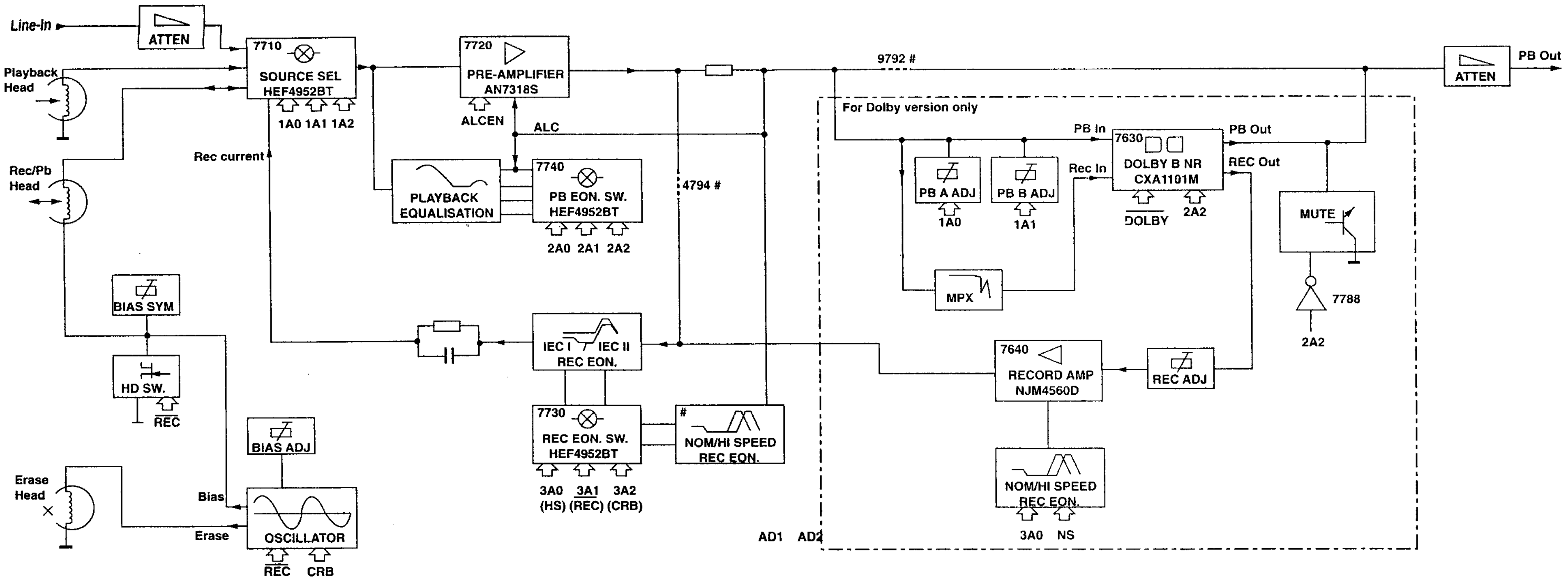
MODULE	ETF6	
VARIANT	1	2
NAME	ND/DD/FR	ND/DD/FF
Deck configuration	double	double
Autoreverse	yes (B)	no
Auto-replay	no	yes (B)
Motor configuration	single	single
Auto tape type selection	yes	yes
Dolby B type Noise Reduction	no	no
19 kHz pilot suppression	no	no
High speed dubbing	yes	yes

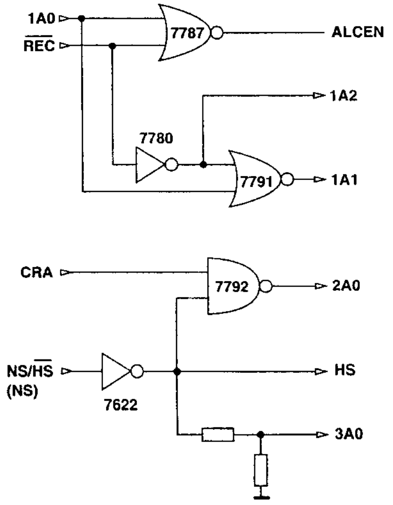
DB = Dolby B NR
DD = Double Deck
FF = Non-Autoreverse
FR = Autoreverse Deck B
ND = Non-Dolby
SD = Single Deck

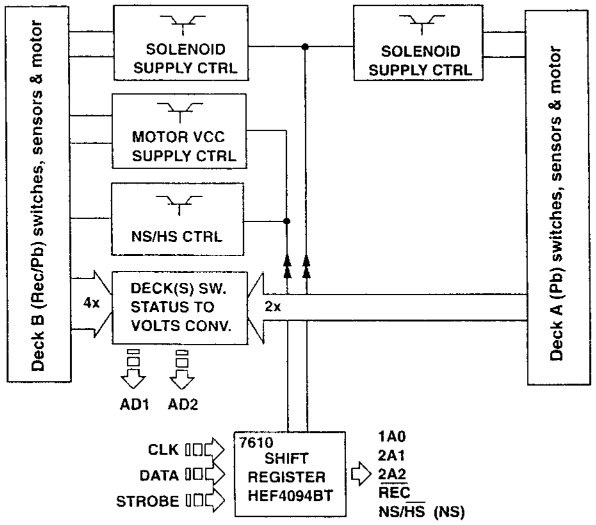
Variations table for Analog Circuit

	Autoreverse	Non-autoreverse
	ND/DD/FR	ND/DD/FF
3723	12k	15k
3724	12k	15k
3743	1k2	1k
3744	1k2	1k
3769	12k	8k2
3772	4k7	5k6
3774	10k	8k2

BLOCK DIAGRAM


Line-In
ATTEN
Playback Head
Rec/Pb Head
Erase Head
7710
SOURCE SEL
HEF4952BT
1A0 1A1 1A2
Rec current
7720
PRE-AMPLIFIER
AN7318S
ALCEN
ALC
PLAYBACK EQUALISATION
7740
PB EQN. SW.
HEF4952BT
2A0 2A1 2A2
4794 #
9792 #
ATTEN
PB Out
For Dolby version only
PB In
7630
DOLBY B NR
CXA1101M
PB Out
REC Out
Rec In
PB A ADJ
PB B ADJ
1A0
1A1
DOLBY
2A2
MUTE
7788
2A2
MPX
BIAS SYM
HD SW.
REC
IEC I
IEC II
REC EQN.
7640
RECORD AMP
NJM4560D
REC ADJ
7730
REC EQN. SW.
HEF4952BT
3A0 3A1 3A2
(HS) (REC) (CRB)
#
NOM/HI SPEED
REC EQN.
NOM/HI SPEED
REC EQN.
3A0 NS
BIAS ADJ
Bias
Erase
OSCILLATOR
REC CRB
AD1 AD2


1A0
REC
7787
ALCEN
1A2
7780
7791
1A1
CRA
7792
2A0
NS/HS
(NS)
7622
HS
3A0


Deck B (Rec/Pb) switches, sensors & motor
SOLENOID SUPPLY CTRL
SOLENOID SUPPLY CTRL
Deck A (Pb) switches, sensors & motor
MOTOR VCC SUPPLY CTRL
NS/HS CTRL
4x
DECK(S) SW. STATUS TO VOLTS CONV.
2x
AD1
AD2
CLK
DATA
STROBE
7610
SHIFT REGISTER
HEF4094BT
1A0
2A1
2A2
REC
NS/HS (NS)

NOTE: # For Non-dolby version only
Only 1 channel is presented.

⇨ MicroProcessor Control / Communication lines

⇨ Direct / Indirect Control lines from Shift Registers

Brief introduction

General

1. Playback Mode
   Signal from the playback head Deck A or Deck B is selected and fed through by the Mode Selector IC7710 (HEF4952B). The signal is amplified by amplifier IC7720 (AN7318S) before feeding to the IC7740 (HEF4952B) and then output to the AF Board through pins 5 and 6 of the connector 1701.

2. Recording Mode
   Recording Signal is selected and fed through by the Mode Selector IC7710 (HEF4952B) which is then amplified by the amplifier IC7720 (AN7318S). The amplified output signal will pass through IC7730 (HEF4952B) and then back to IC7710 (HEF4952B) before registered into the Rec/PB Head of Deck B.

3. Dubbing Mode
   In Dubbing mode, signal from the playback head Deck A is selected and fed through by the Mode Selector IC7710 (HEF4952B) which is then equalised for playback mode by the amplifier IC7720 (AN7318S) so that a flat response is obtained after the pre-amp. The equalised signal will then follow the same path as in the Recording mode.

4. Mode Selector
   The Mode Selector IC7710 (HEF4952B) caters for 4 inputs signal, namely Playback Signal from Deck A, Playback Signal from Deck B, Recording Signal and Dubbing Signal.

5. Amplifier PB/REC
   Amplifier IC7720 (AN7318S) is for the purpose of amplifying the Playback and Recording signal from the Mode Selector.

6. Automatic Level Control (ALC)
   ALC circuit consists of resistors (3765, 3766, 3767), capacitors (2762 , 2763) and control by transistor 7787 (BC847B). ALC limits the amplifier output to a constant value when input signal becomes too large, thus limiting recording current to below saturation level, to prevent recording distortion.

7. Muting Circuit (For Non-Dolby only)
   Switch S4 of the IC7740 (HEF4952B) is for the purpose of muting the output during Recording mode. During Recording mode, S4 is closed and shorted to the ground.

8. IC7740 (HEF4952B)
   The function of the IC7740 (HEF4952B) is to change time constant between 120us Ferro (IEC I) and 70us Chrome (IEC II) during playback mode. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II). This IC will switch to Flat Gain during the Recording mode.

9. IC7730 (HEF4952B)
   The function of the IC7730 (HEF4952B) is to change gain and time constant according to tape type and recording speed to boost recording current at higher frequency during recording to compensate for head loss. It will automatically determined whether the tape type is 120us Ferro (IEC I) or 70us Chrome (IEC II).

10. Bias Level
    Bias Level making use of the Variable resistor (3773) for adjusting the optimal level of the bias current for Ferro or Chrome.

11. Bias Symm (For Dolby only)
    Bias Symm making use of the Variable resistor (3785) to adjust the bias current for the left and the right channel to be equal.

12. PB Switch
    Playback Switch which consists of the FETs 7785 (For Dolby only) & 7786 (J111) is for the purpose of providing a virtual ground for the Rec/PB Head (Deck B) during Playback mode. During the Playback mode, the FETs are turn on and shorted pin 2 and 4 of connector 1720 to the ground. During Recording mode, the FETs are turn off to allow the oscillator signal to be superposition onto the Recording signal for recording.

13. Motor Speed
    During High speed dubbing, a feedback signal from the uP through pin 03 of the IC7610 (HEF4094BT) will trigger the transistors 7622 (BC847B) and 7616 (BC857B) to cause a change in the voltage level between High and Low, thus changing the speed of the motor.

14. IC7610 (HEF4094BT)
    IC7610 (HEF4094BT) is a Shift Register use for issues the logic for cmos switch ICs (HEF4952B) via 1A0, 2A1 and 2A2. IC7610(HEF4094BT) also issues logic to On/Off SOL_A, SOL_B and MOT. Recording speed is also controlled by IC7610(HEF4094BT) via NS/HS.

Dolby Circuit (For sets with Dolby B NR only)

15. IC7630 (CXA1101M)
    IC7630 (CXA1101M) in the Dolby circuit is a Dolby Noise Reduction Type B IC for the Playback and Recording signal. Noise Reduction ON/OFF are controlled by $\overline{\text{DOLBY}}$, which is from CLK, direct from uP. After clocking in DATA, CLK is set to HIGH/ LOW for NR OFF/ON.

16. 19kHz Filter
    The 19kHz filters 5631 & 5632 (LXD-210) in the Dolby circuit is for the purpose of filtering the 19kHz Pilot Tone (for Tuner signal only) of the Recording signal.

17. Level Adjust
    The Variable resistor 3635, 3636,3641 and 3642 in the Dolby circuit is for adjusting the playback level of the Dolby reference (400Hz , 200nWb/m). Transistor 7631, 7632 are ON to enable adjustment of 3641, 3642 during Playback Deck A. Transistor 7633, 7634 and 3635, 3636 are active for Playback Deck B.

18. Amplifier IC7640 (NJM4560M)
    The Amplifiers 7640A & 7640B (NJM4560M) in the Dolby circuit is for the purpose of amplified the Recording signal.

19. Muting Circuit
    The muting circuit which consists of transistors 7788, 7789 and 7790 (BC847B) is for the purpose of muting the output during Recording mode.

NOTATIONS & ABBREVIATIONS USED IN THIS DOCUMENT

CR	Chrome (IEC type II)
DB	Dolby NR type B
DD	Double Deck
DM	Double Motor
FE	Ferro (IEC type I)
FF	Non Auto Reverse
FR	Auto Reverse on Deck B
Gnd x	Ground x
HSD	High speed dubbing
ND	Non Dolby
NR	Noise Reduction
NSD	Normal speed dubbing
PB	Playback
REC	Record
S/A	Sub-assy
SD	Single Deck
SM	Single Motor

CONNECTORS ASSIGNMENTS:

CONNECTOR 1701 — INTERCONNECTION TO AF5 BOARD

O	1	REC-R	Record input right
O	2	REC-L	Record input left
O	3	GND A	AF Ground
O	4	+12V	D.C. supply (+12V) in
O	5	TAPE-R	Playback output right
O	6	TAPE-L	Playback output left
O	7	-CMOS	Negative d.c. supply (-9V) for CMOS ICs

CONNECTOR 1703 — INTERCONNECTION TO AF5 BOARD

O	1	GND M	Motor Ground
O	2	+MOTOR	D.C. supply (+12V) for tape deck motor & solenoid

CONNECTOR 1706 — INTERCONNECTION TO FRONT BOARD

O	1	AD2	Deck sensing switches output voltage / Deck A EOT
O	2	AD1	Deck sensing switches output voltage / Deck B EOT
O	3	+5	DC supply +5V for ADC network
O	4	GND P	Control & Oscillator Ground
O	5	CLK	HEF4094BT shift register Clock line
O	6	DATA	HEF4094BT shift register Data line
O	7	STROBE	HEF4094BT shift register Strobe line

CONNECTOR 1710 — DECK B HEADS CONNECTON *(For ETF6 only)*

O	1	B R/P HD L+	R/P Head left channel positive
O	2	B R/P HD R-	R/P Head right channel positive
O	3	CMN	R/P Head return ground
O	4	ERASE HEAD	Erase Head
O	5	GND A	Erase Head ground

CONNECTOR 1720 — DECK B HEADS CONNECTON *(For ETF5 only)*

O	1	B R/P HD L+	R/P Head left channel positive
O	2	B R/P HD L-	R/P Head left channel negative
O	3	B R/P HD R+	R/P Head right channel positive
O	4	B R/P HD R-	R/P Head right channel negative
O	5	ERASE HEAD	Erase Head
O	6	GND A	Erase Head ground

CONNECTOR 1730 — DECK A HEAD CONNECTIONS *(For Double Deck versions only)*

O	1	A PB HD R+	Pb Head right channel positive
O	2	GND A	Pb Head return ground shield
O	3	A PB HD L+	Pb Head left channel positive

CONNECTOR 1740 — DECK B CONTROL INTERFACE *(For ETF5 Double Deck only)*

O	1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
O	2	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
O	3	CrO2	Chrome tape detection switch	[open=Cr: close=Fe]
O	4	PHOTO B	Photo sensor output (tape movement indication)	
O	5	SOL B	Solenoid supply	
O	6	Vcc	Deck / Motor supply	
O	7	MODE	Mode switch (head engagement)	[open=off: close=engaged]
O	8	GND M	Deck / Motor ground	
O	9	H	H pin for motor	
O	10	L	L pin for motor	

CONNECTOR 1750 — DECK A CONTROL INTERFAC *(For ETF5 Double Deck only)*

O	1	CrO2	Chrome tape detection switch	[open=Cr: close=Fe]
O	2	PHOTO A	Photo sensor output (tape movement indication)	
O	3	SOL A	Solenoid supply	
O	4	Vcc	Deck/Motor supply	
O	5	MODE	Mode switch (head engagement)	[open=off: close=engaged]
O	6	GND M	Deck/Motor ground	

CONNECTOR 1760 — DECK B CONTROL INTERFACE *(For ETF5 Single Deck only)*

O	1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
O	2	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
O	3	CrO2	Chrome tape detection switch	[open=Cr: close=Fe]
O	4	PHOTO B	Photo sensor output (tape movement indication)	
O	5	SOL B	Solenoid supply	
O	6	Vcc	Deck / Motor supply	
O	7	MODE	Mode switch (head engagement)	[open=off: close=engaged]
O	8	GND M	Deck / Motor ground	

CONNECTOR 1770 — DECK B CONTROL INTERFACE *(For ETF6 only)*

O	1	REC REW	Record tab protection status switch (reverse)	[open=on: close=off]
O	2	REC FWD	Record tab protection status switch (forward)	[open=on: close=off]
O	3	CrO2 B	Chrome tape detection switch deck B	[open=Cr: close=Fe]
O	4	PHOTO B	Photo sensor output (tape movement indication)	
O	5	SOL B	Solenoid supply for deck B	
O	6	Vcc	Deck / Motor supply	
O	7	MODE B	Mode switch (head engagement)	[open=off: close=engaged]
O	8	GND M	Deck / Motor ground	
O	9	L	L pin for motor	
O	10	H	H pin for motor	
O	11	CrO2 A	Chrome tape detection switch deck A	[open=Cr: close=Fe]
O	12	SOL A	Solenoid supply for deck A	
O	13	PHOTO A	Photo sensor output (tape movement indication)	

TAPE MECHANISM ELECTRONICS

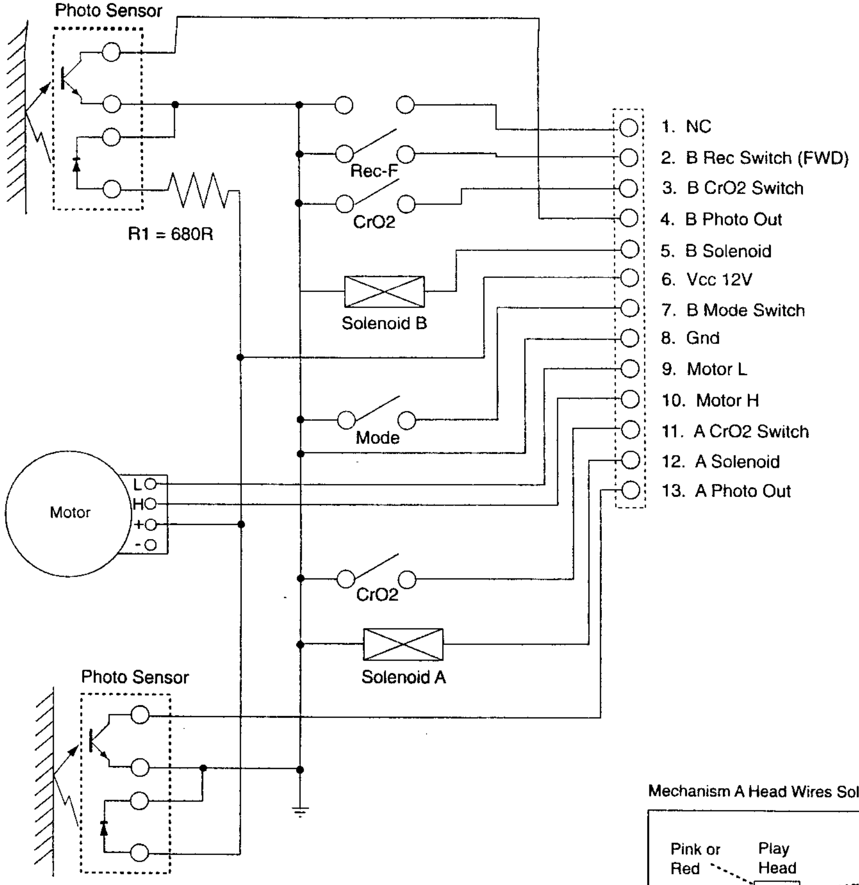
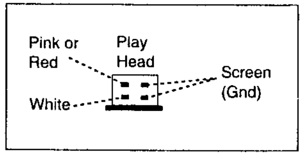
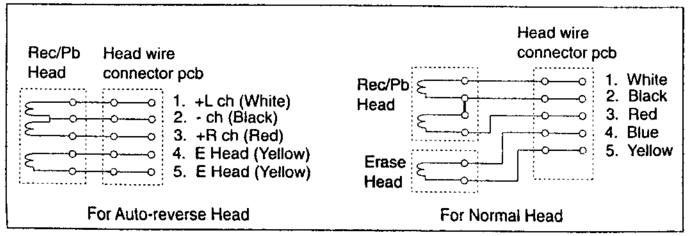


Photo Sensor
R1 = 680R
Rec-F
CrO2
Solenoid B
Mode
Motor
L
H
+
-
CrO2
Solenoid A
Photo Sensor
1. NC
2. B Rec Switch (FWD)
3. B CrO2 Switch
4. B Photo Out
5. B Solenoid
6. Vcc 12V
7. B Mode Switch
8. Gnd
9. Motor L
10. Motor H
11. A CrO2 Switch
12. A Solenoid
13. A Photo Out

Mechanism A Head Wires Soldering


Pink or
Red
Play
Head
White
Screen
(Gnd)

Mechanism B Head Wires Soldering


Rec/Pb
Head
Head wire
connector pcb
1. +L ch (White)
2. - ch (Black)
3. +R ch (Red)
4. E Head (Yellow)
5. E Head (Yellow)
For Auto-reverse Head
Head wire
connector pcb
Rec/Pb
Head
Erase
Head
1. White
2. Black
3. Red
4. Blue
5. Yellow
For Normal Head

General

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST with	ADJUST to
ADJUST MOTOR SPEED						
HIGH SPEED	SBC420 (4822 397 30071) 3150Hz	DUBBING	1 or 2 LEFT RIGHT	frequency counter	3622 *	5040Hz ± 0.5%
NORMAL SPEED		PLAY B			3620	3150Hz ± 0.5%
		PLAY A			check	3150Hz -0.8/+1.8%
CHECK WOW & FLUTTER						
DECK A & B	SBC420 (4822 397 30071) 3150Hz	PLAY	1 or 2 LEFT RIGHT	W&F-meter	check only	≤0.4 % DIN or ≤0.35 % CCIR *
ADJUST AZIMUTH						
DECK A & B	SBC420 (4822 397 30071) 10kHz	PLAY FWD	1 or 2 LEFT RIGHT	mV-meter	left hand screw	max. output level & left=right
		PLAY REV #			right hand screw	

Playback

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST with	ADJUST to
ADJUST DOLBY PLAYBACK LEVEL *						
DECK A	TCC-130 (4822 397 30269) 200nWb/m	PLAY	7 or 8 LEFT RIGHT	mV-meter	3641(L), 3642(R)	548mV ±0.5dB
DECK B		PLAY FWD			3635(L), 3636(R)	
		PLAY REV #			Check	548mV ±1dB
CHECK PLAYBACK FREQUENCY RESPONSE						
PB. FREQ. RESP.	SBC420 (4822 397 30071)	PLAY	1 or 2 LEFT RIGHT	mV-meter	Check	limits see fig.1

* For Dolby version only

# For Auto-reverse version only

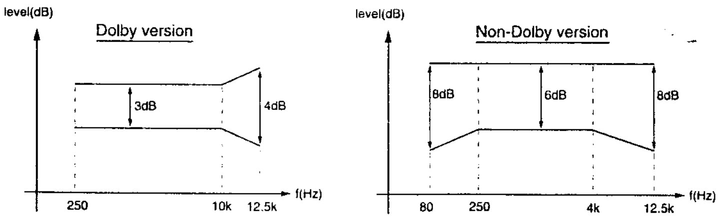


figure. 1

Recording

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST	
					with	to
PRE-ADJUST BIAS AND BIAS-SYMMETRY						
DECK B	CrO 2	RECORD	5 or 6 LEFT RIGHT	mV-meter	3773	995mV
					3785 *	left = right
	FERRO				check only	750mV ± 1.5dB
CHECK OVERALL FREQUENCY RESPONSE AND DISTORTION						
Inject 3mV signals 100Hz, 250Hz, 1kHz, 10kHz, 12.5kHz via 3 or 4	CrO 2	RECORD				
	RECORDED CASSETTE	PLAY	1 or 2 LEFT RIGHT	mV-meter	check only	limits see fig.2
Inject 1kHz 8.85mV via 3 or 4	CrO 2	RECORD				
	RECORDED CASSETTE	PLAY	1 or 2 LEFT RIGHT	THD-meter	check only	≤3%
Remark: If high frequencies are not within limits, decrease bias and re-measure. If distortion is too high increase bias and re-measure.						
ADJUST DOLBY RECORD LEVEL *						
Inject 400Hz 8.85mV via 3 or 4	CrO 2	RECORD	9 or 10 LEFT RIGHT	mV-meter	3655 & 3556	420mV
	RECORDED CASSETTE	PLAY	7 or 8 LEFT RIGHT	mV-meter	check	170mV ± 1dB
Remark: If measured value is out, re-adjust record level up or down slightly to attain play level.						

* For Dolby version only

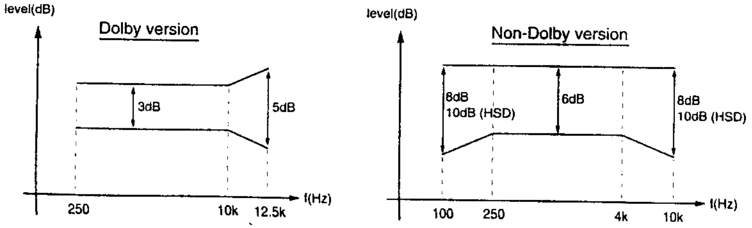
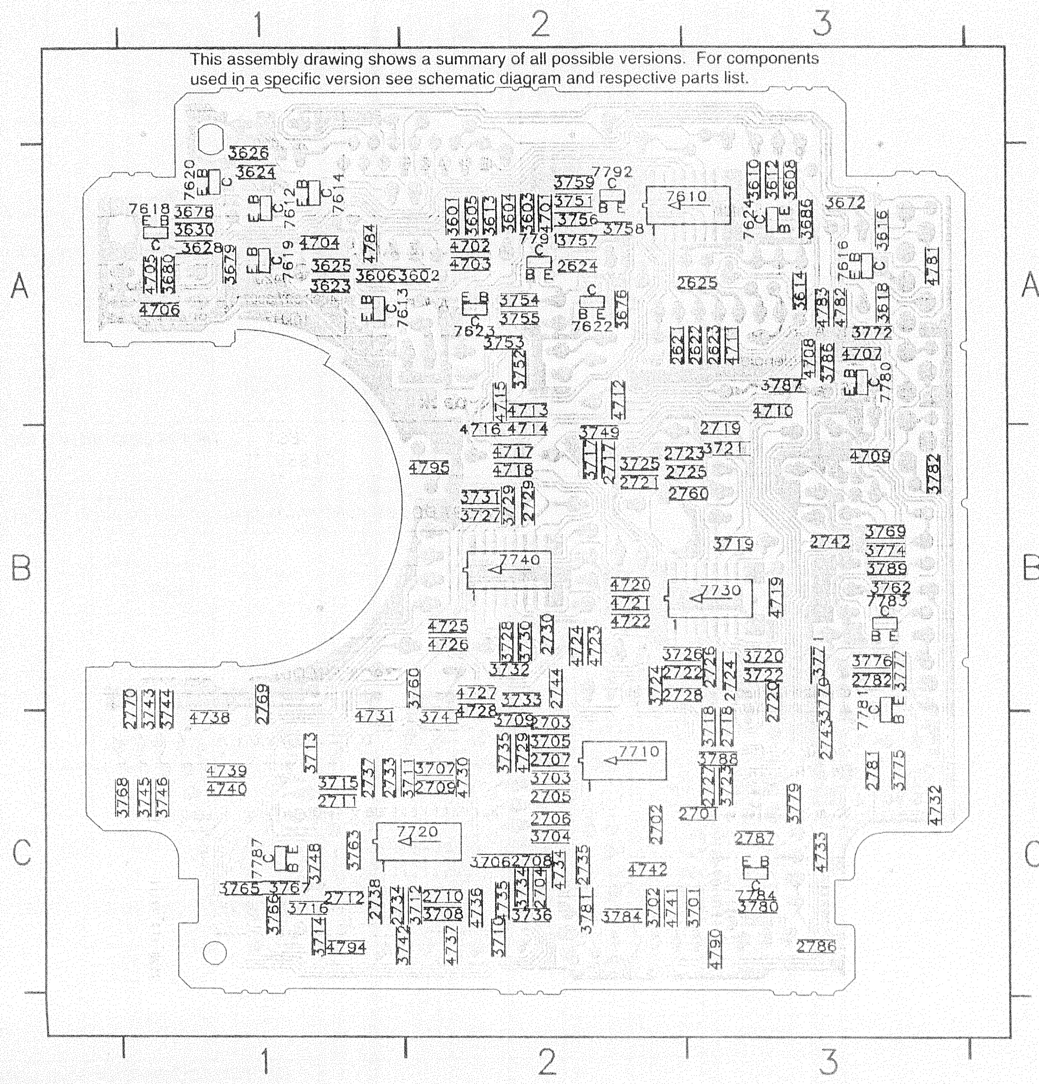


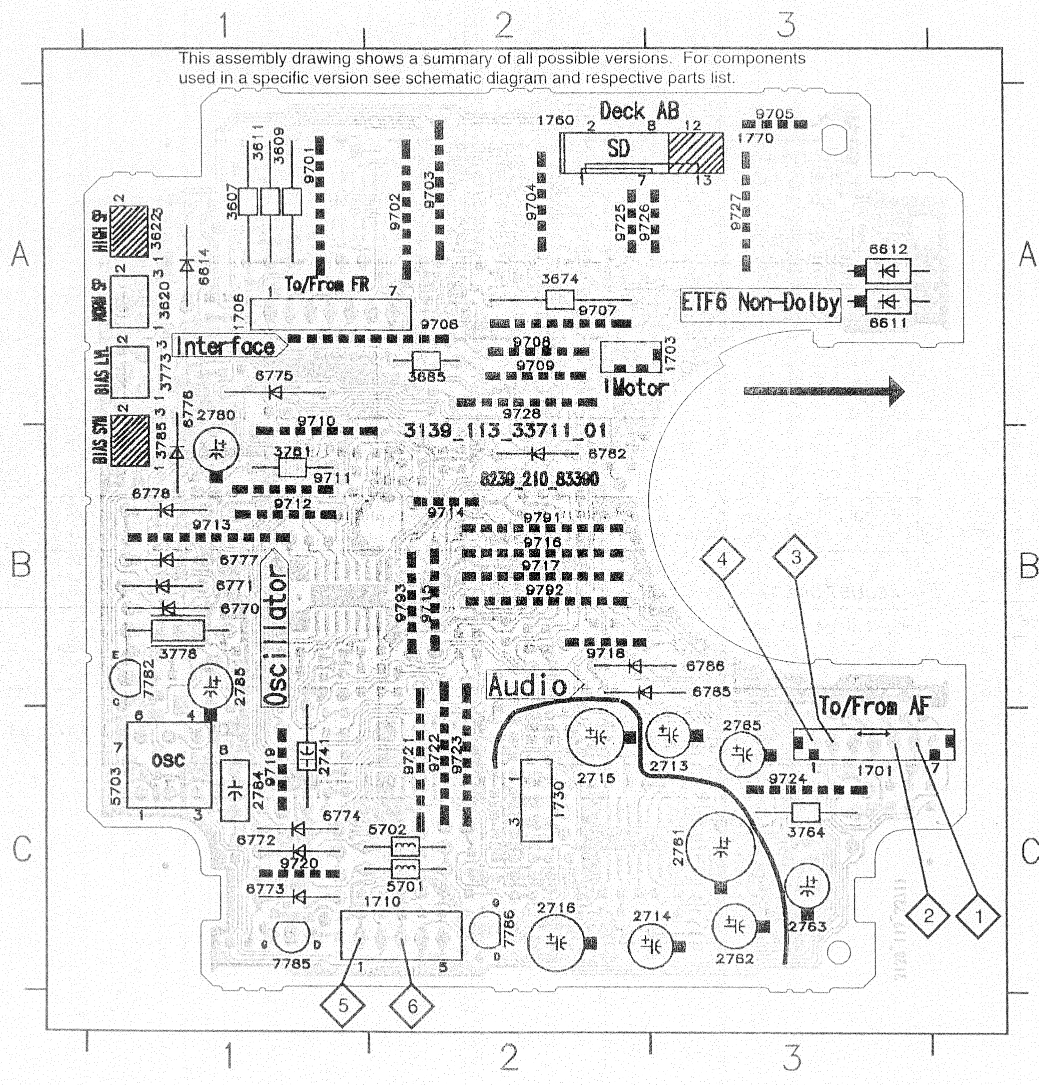
figure. 2

CHIP LAYOUT


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

2621	A2	3680	A1	3779	C3	7730	B3
2622	A3	3686	A3	3780	C3	7740	B2
2623	A3	3701	C3	3781	C2	7780	A3
2624	A2	3702	C2	3782	B3	7781	B3
2625	A3	3703	C2	3784	C2	7783	B3
2701	C3	3704	C2	3786	A3	7784	C3
2702	C2	3705	C2	3787	A3	7787	C1
2703	C2	3706	C2	3788	C3	7791	A2
2704	C2	3707	C2	3789	B3	7792	A2
2705	C2	3708	C2	4701	A2		
2706	C2	3709	C2	4702	A2		
2707	C2	3710	C2	4703	A2		
2708	C2	3711	C2	4704	A1		
2709	C2	3712	C2	4705	A1		
2710	C2	3713	C1	4706	A1		
2711	C1	3714	C1	4707	A3		
2712	C1	3715	C1	4708	A3		
2717	B2	3716	C1	4709	B3		
2718	C3	3717	B2	4710	A3		
2719	B3	3718	C3	4711	A3		
2720	B3	3719	B3	4712	A2		
2721	B2	3720	B3	4713	A2		
2722	B2	3721	B3	4714	B2		
2723	B2	3722	B3	4715	A2		
2724	B3	3723	C3	4716	B2		
2725	B3	3724	B2	4717	B2		
2726	B3	3725	B2	4718	B2		
2727	C3	3726	B2	4719	B3		
2728	B2	3727	B2	4720	B2		
2729	B2	3728	B2	4721	B2		
2730	B2	3729	B2	4722	B2		
2731	B2	3730	B2	4723	B2		
2732	B2	3731	B2	4724	B2		
2733	C1	3732	B2	4725	B2		
2734	C1	3733	B2	4726	B2		
2735	C2	3734	C2	4727	B2		
2737	C1	3735	C2	4728	C2		
2738	C1	3736	C2	4729	C2		
2742	B3	3741	C2	4730	C2		
2743	C3	3742	C1	4731	C1		
2760	B3	3743	B1	4732	C3		
2769	B1	3744	B1	4733	C3		
2770	B1	3745	C1	4734	C2		
2781	C3	3746	C1	4735	C2		
2782	B3	3748	C1	4736	C2		
2786	C3	3749	B2	4737	C2		
2787	C3	3751	A2	4738	C1		
3601	A2	3752	A2	4739	C1		
3602	A2	3753	A2	4740	C1		
3603	A2	3754	A2	4741	C2		
3604	A2	3755	A2	4742	C2		
3605	A2	3756	A2	4781	A3		
3606	A1	3757	A2	4782	A3		
3608	A3	3758	A2	4783	A3		
3610	A3	3759	A2	4784	A1		
3612	A3	3760	B2	4790	C3		
3613	A2	3762	B3	4794	C1		
3614	A3	3763	C1	7610	A3		
3616	A3	3765	C1	7612	A1		
3618	A3	3766	C1	7613	A2		
3623	A1	3767	C1	7614	A1		
3624	A1	3768	C1	7616	A3		
3625	A1	3769	B3	7618	A1		
3626	A1	3770	B3	7619	A1		
3628	A1	3771	B3	7620	A1		
3630	A1	3772	A3	7622	A2		
3672	A3	3774	B3	7623	A2		
3676	A2	3775	C3	7624	A3		
3678	A1	3776	B3	7710	C2		
3679	A1	3777	B3	7720	C2		

COMPONENT LAYOUT

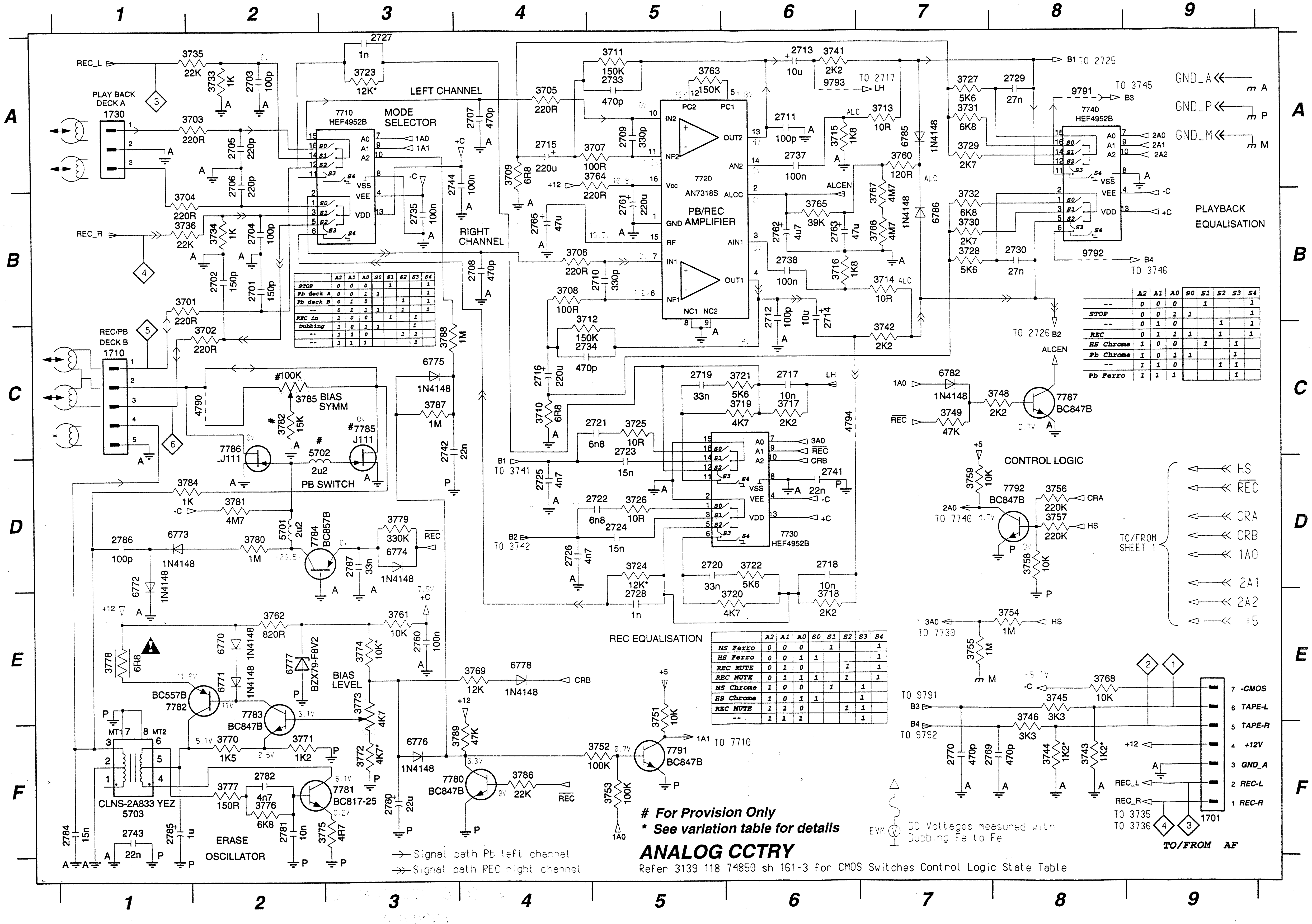


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

1
2
3
A
B
C
Deck AB
SD
To/From FR
Interface
Motor
3139_113_33711_01
8239_210_83390
ETF6 Non-Dolby
Oscillator
OSC
Audio
To/From AF
HIGH SP
NORM SP
BIAS LVL
BIAS SW
1
2
3
4
5
6

1701	C3
1703	A2
1706	A1
1710	C2
1730	C2
1770	A2
2713	B3
2714	C3
2715	B2
2716	C2
2741	C1
2761	C3
2762	C3
2763	C3
2765	C3
2780	B1
2784	C1
2785	B1
3607	A1
3609	A1
3611	A1
3620	A1
3622	A1
3674	A2
3685	A2
3761	B1
3764	C3
3773	A1
3778	B1
3785	B1
5701	C2
5702	C2
5703	C1
6611	A3
6612	A3
6614	A1
6770	B1
6771	B1
6772	C1
6773	C1
6774	C1
6775	A1
6776	B1
6777	B1
6778	B1
6782	B2
6785	B2
6786	B2
7782	B1
7785	C1
7786	C2
9701	A1
9702	A2
9703	A2
9704	A2
9705	A3
9706	A2
9707	A2
9708	A2
9709	A2
9710	B1
9711	B1
9712	B1
9713	B1
9714	B2
9715	B2
9716	B2
9717	B2
9718	B2
9719	C1
9720	C1
9721	C2
9722	C2
9723	C2
9724	C3
9725	A2
9726	A3
9727	A3
9728	A2
9791	B2
9792	B2
9793	B2

ANALOG CIRCUIT


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
REC_L
3735
22K
3733
1K
2703
100p
PLAY BACK
DECK A
1730
3703
220R
2705
220p
2706
220p
3704
220R
REC_R
3736
22K
3734
1K
2704
100p
2702
150p
2701
150p
3701
220R
3702
220R
REC/PB
DECK B
1710
2727
1n
3723
12K*
LEFT CHANNEL
7710
HEF4952B
MODE
SELECTOR
1A0
1A1
2707
470p
2744
100n
2735
100n
RIGHT
CHANNEL
2708
470p
3705
220R
3711
150K
2733
470p
3763
150K
2713
10u
3741
2K2
B1 TO 2725
9793
TO 2717
LH
3727
5K6
3731
6K8
2729
27n
9791
TO 3745
B3
7740
HEF4952B
2A0
2A1
2A2
GND_A
GND_P
GND_M
PLAYBACK
EQUALISATION
3729
2K7
3732
6K8
3730
2K7
3728
5K6
2730
27n
9792
B4
TO 3746
2715
220u
3707
100R
2709
330p
3764
220R
2761
220u
7720
AN7318S
PB/REC
AMPLIFIER
IN2
OUT2
NF2
AN2
Vcc
ALCC
GND
RF
AIN1
IN1
OUT1
NF1
NC1
NC2
PC2
PC1
2711
100p
2737
100n
3715
1K8
3713
10R
3760
120R
ALCEN
3765
39K
3767
4M7
3766
4M7
2762
4u7
2763
47u
6785
1N4148
6786
1N4148
ALC
2738
100n
3716
1K8
3714
10R
2712
100p
2714
10u
3742
2K2
3709
6R8
2765
47u
3706
220R
2710
330p
3708
100R
3712
150K
2734
470p
2716
220u
3710
6R8
TO 2726 B2
ALCEN
7787
BC847B
6782
1N4148
3748
2K2
3749
47K
1A0
REC
2719
33n
3721
5K6
3719
4K7
2717
10n
3717
2K2
LH
2721
6n8
3725
10R
2723
15n
7730
HEF4952B
3A0
REC
CRB
2741
22n
B1
TO 3741
2725
4n7
2722
6n8
3726
10R
2724
15n
B2
TO 3742
2726
4n7
3724
12K*
2728
1n
2720
33n
3722
5K6
3720
4K7
2718
10n
3718
2K2
REC EQUALISATION
4794
CONTROL LOGIC
3759
10K
7792
BC847B
3756
220K
3757
220K
CRA
HS
2A0
TO 7740
3758
10K
HS
REC
CRA
CRB
1A0
2A1
2A2
+5
TO/FROM
SHEET 1
3A0
TO 7730
3754
1M
3755
1M
#100K
3785
BIAS
SYMM
4790
3782
15K
7786
J111
5702
2u2
7785
J111
PB SWITCH
6775
1N4148
3787
1M
3788
1M
2742
22n
3784
1K
3781
4M7
5701
2u2
2786
100p
6773
1N4148
3780
1M
7784
BC857B
2787
33n
3779
330K
6774
1N4148
6772
1N4148
3762
820R
3761
10K
2760
100n
3778
6R8
6770
1N4148
6771
1N4148
6777
BZX79-F8V2
3774
10K*
BIAS
LEVEL
3773
4K7
3772
4K7*
3769
12K
6778
1N4148
CRB
BC557B
7782
7783
BC847B
3770
1K5
3771
1K2
MT1
MT2
CLNS-2A833 YEZ
5703
3777
150R
2782
4n7
3776
6K8
7781
BC817-25
3775
4R7
2781
10n
ERASE
OSCILLATOR
2784
15n
2743
22n
2785
1u
6776
1N4148
2780
22u
3789
47K
7780
BC847B
3786
22K
REC
3752
100K
3753
100K
7791
BC847B
3751
10K
1A1 TO 7710
3768
10K
3745
3K3
3746
3K3
TO 9791
B3
B4
TO 9792
2770
470p
2769
470p
3744
1K2*
3743
1K2*
1701
7 -CMOS
6 TAPE-L
5 TAPE-R
4 +12V
3 GND_A
2 REC-L
1 REC-R
REC_L
REC_R
TO 3735
TO 3736
TO/FROM AF
EVM
DC Voltages measured with
Dubbing Fe to Fe
Signal path Pb left channel
Signal path REC right channel

	A2	A1	A0	S0	S1	S2	S3	S4
STOP	0	0	0		1			1
Pb deck A	0	0	1	1				1
Pb deck B	0	1	0			1		1
--	0	1	1	1		1		1
REC in	1	0	0		1		1	
Dubbing	1	0	1	1			1	
--	1	1	0			1	1	
--	1	1	1				1	

	A2	A1	A0	S0	S1	S2	S3	S4
--	0	0	0		1			1
STOP	0	0	1	1				1
--	0	1	0			1		1
REC	0	1	1	1		1		1
HS Chrome	1	0	0		1		1	
Pb Chrome	1	0	1	1			1	
--	1	1	0			1	1	
Pb Ferro	1	1	1				1	

	A2	A1	A0	S0	S1	S2	S3	S4
NS Ferro	0	0	0		1			1
HS Ferro	0	0	1	1				1
REC MUTE	0	1	0			1		1
REC MUTE	0	1	1	1		1		1
NS Chrome	1	0	0		1		1	
HS Chrome	1	0	1	1			1	
REC MUTE	1	1	0			1	1	
--	1	1	1				1	

# For Provision Only

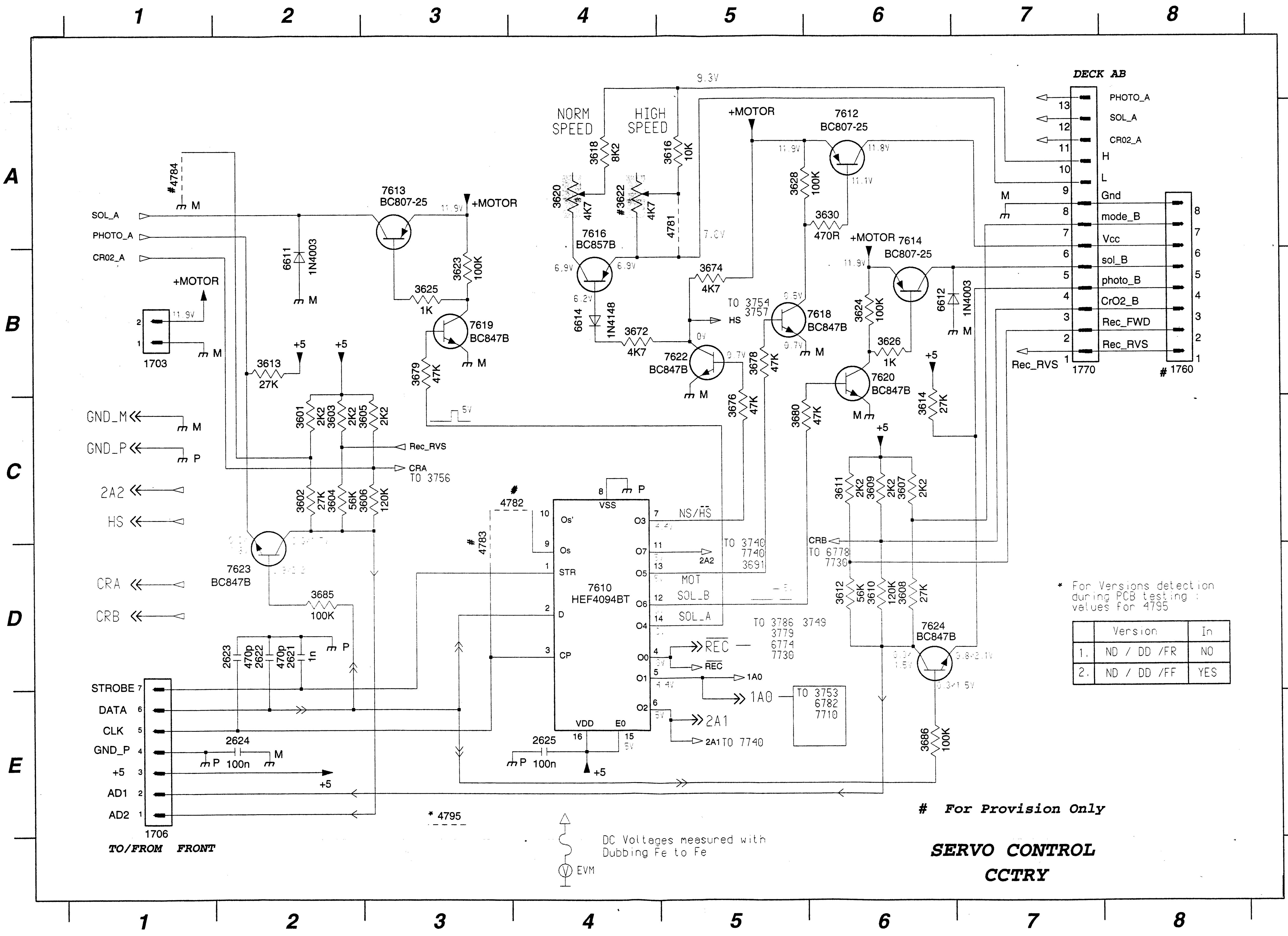
** See variation table for details*

ANALOG CCTRY

Refer 3139 118 74850 sh 161-3 for CMOS Switches Control Logic State Table

1701	F9
1710	C1
1730	A1
2701	B2
2702	B2
2703	A2
2704	B2
2705	A2
2706	A2
2707	A4
2708	B4
2709	A5
2710	B5
2711	A6
2712	B6
2713	A6
2714	B6
2715	A4
2716	C4
2717	C6
2718	D6
2719	C5
2720	D5
2721	C5
2722	D5
2723	C5
2724	D5
2725	D4
2726	D4
2727	A3
2728	E5
2729	A8
2730	B8
2733	A5
2734	C4
2735	B3
2737	A6
2738	B6
2741	D6
2742	C3
2743	F1
2744	A3
2760	E3
2761	B5
2762	B6
2763	B6
2765	B4
2769	F7
2770	F7
2780	F3
2781	F2
2782	F2
2784	F1
2785	F1
2786	D1
2787	D3
3701	B1
3702	C2
3703	A2
3704	B1
3705	A4
3706	B4
3707	A5
3708	B4
3709	A4
3710	C4
3711	A5
3712	B4
3713	A7
3714	B7
3715	A6
3716	B6
3717	C6
3718	E6
3719	C6
3720	E6
3721	C6
3722	D6
3723	A3
3724	D5
3725	C5
3726	D5
3727	A7
3728	B7
3729	A7
3730	B7
3731	A7
3732	B7
3733	A2
3734	B2
3735	A2
3736	B1
3741	A6
3742	C7
3743	F8
3744	F8
3745	E8
3746	E8
3748	C8
3749	C7
3751	E5
3752	F5
3753	F5
3754	E8
3755	E7
3756	D8
3757	D8
3758	D8
3759	D7
3760	A7
3761	E3
3762	E2
3763	A5
3764	A5
3765	B6
3766	B7
3767	B7
3768	E8
3769	E4
3770	F2
3771	F2
3772	F3
3773	E3
3774	E3
3775	F2
3776	F2
3777	F2
3778	E1
3779	D3
3780	D2
3781	D2
3782	C2
3784	D1
3785	C2
3786	F4
3787	C3
3788	C3
3789	F3
4790	C2
4794	C6
5701	D2
5702	C2
5703	F1
6770	E2
6771	E2
6772	D1
6773	D1
6774	D3
6775	C3
6776	F3
6777	E2
6778	E4
6782	C7
6785	A7
6786	B7
7710	A3
7720	A5
7730	D6
7740	A8
7780	F4
7781	F3
7782	E1
7783	E2
7784	D2
7785	C3
7786	C2
7787	C8
7791	F5
7792	D8
9791	A8
9792	B8
9793	A6

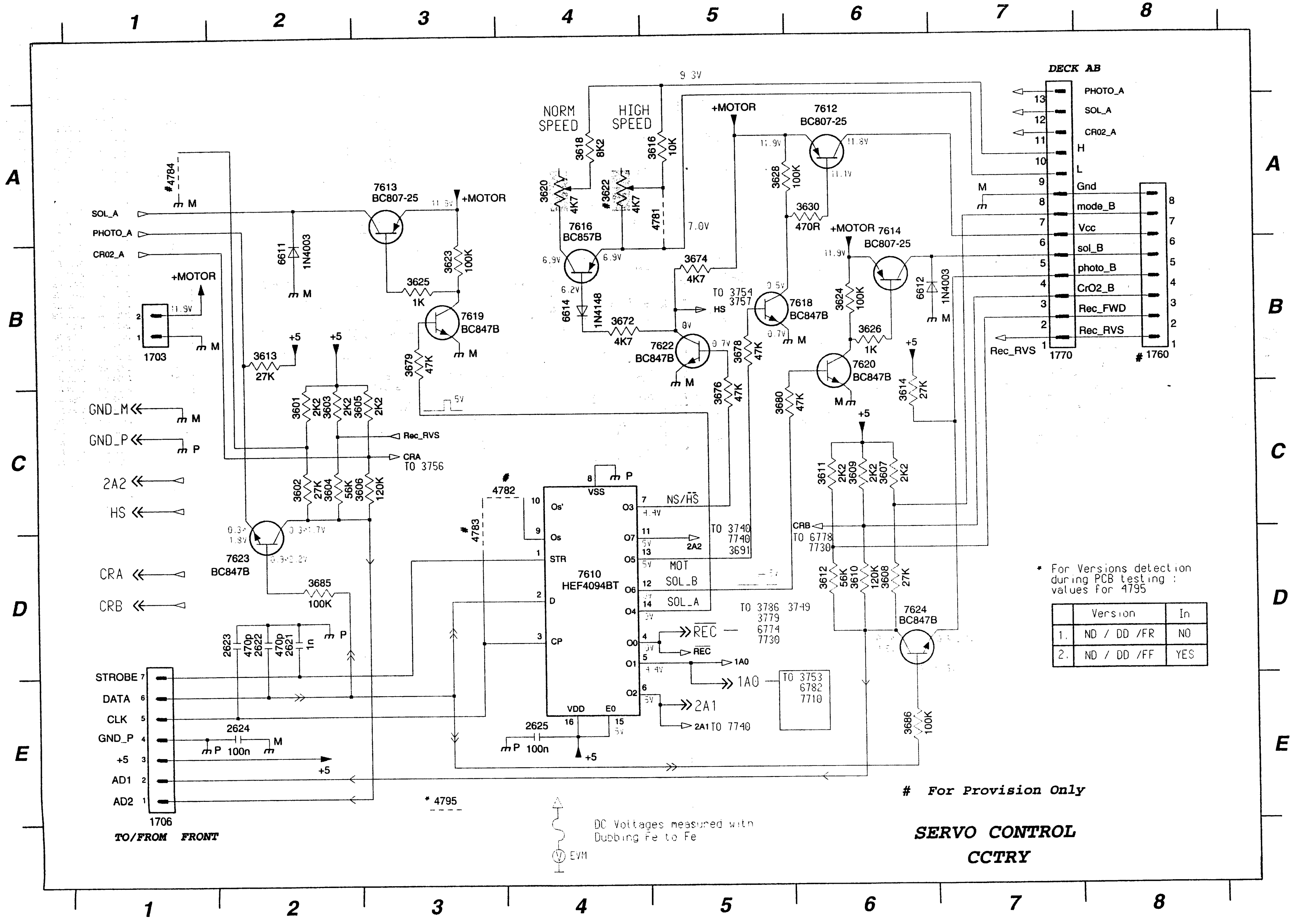
SERVO CONTROL CIRCUIT


1
2
3
4
5
6
7
8
A
B
C
D
E
DECK AB
PHOTO_A
SOL_A
CR02_A
H
L
Gnd
mode_B
Vcc
sol_B
photo_B
CrO2_B
Rec_FWD
Rec_RVS
1770
# 1760
9.3V
NORM SPEED
HIGH SPEED
3618 8K2
3616 10K
3620 4K7
#3622 4K7
4781
7616 BC857B
7612 BC807-25
7613 BC807-25
7614 BC807-25
+MOTOR
3628 100K
3630 470R
3674 4K7
6614 1N4148
3672 4K7
7622 BC847B
7618 BC847B
TO 3754 3757
HS
3678 47K
3676 47K
3624 100K
6612 1N4003
3626 1K
7620 BC847B
3614 27K
3680 47K
SOL_A
PHOTO_A
CR02_A
#4784
M
6611 1N4003
3623 100K
3625 1K
7619 BC847B
3679 47K
5V
+MOTOR
1703
3613 27K
+5
3601 2K2
3603 2K2
3605 2K2
Rec_RVS
CRA TO 3756
3602 27K
3604 56K
3606 120K
GND_M
GND_P
2A2
HS
CRA
CRB
7623 BC847B
3685 100K
# 4782
# 4783
7610 HEF4094BT
VSS
Os'
Os
STR
D
CP
VDD
E0
O3
O7
O5
O6
O4
O0
O1
O2
NS/HS
2A2
MOT
SOL_B
SOL_A
TO 3740 7740 3691
REC
1A0
2A1
TO 3786 3749 3779 6774 7730
TO 3753 6782 7710
2A1 TO 7740
CRB
TO 6778 7730
3611 2K2
3609 2K2
3607 2K2
3612 56K
3610 120K
3608 27K
7624 BC847B
3686 100K
2623 470p
2622 470p
2621 1n
2624 100n
2625 100n
STROBE
DATA
CLK
GND_P
+5
AD1
AD2
1706
TO/FROM FRONT
* 4795
EVM
DC Voltages measured with Dubbing Fe to Fe
* For Versions detection during PCB testing : values for 4795
# For Provision Only
SERVO CONTROL CCTRY

Version		In
1.	ND / DD /FR	NO
2.	ND / DD /FF	YES

1703	B1
1706	E1
1760	B8
1770	B7
2621	D2
2622	D2
2623	D2
2624	E2
2625	E4
3601	C2
3602	C2
3603	C2
3604	C2
3605	C3
3606	C3
3607	C6
3608	D6
3609	C6
3610	D6
3611	C6
3612	D6
3613	B2
3614	C6
3616	A5
3618	A4
3620	A4
3622	A4
3623	B3
3624	B6
3625	B3
3626	B6
3628	A5
3630	A6
3672	B4
3674	B5
3676	C5
3678	B5
3679	B3
3680	C5
3685	D2
3686	E6
4781	A5
4782	C4
4783	C3
4784	A1
4795	E3
6611	B2
6612	B6
6614	B4
7610	D4
7612	A6
7613	A3
7614	A6
7616	A4
7618	B6
7619	B3
7620	B6
7622	B5
7623	D2
7624	D6

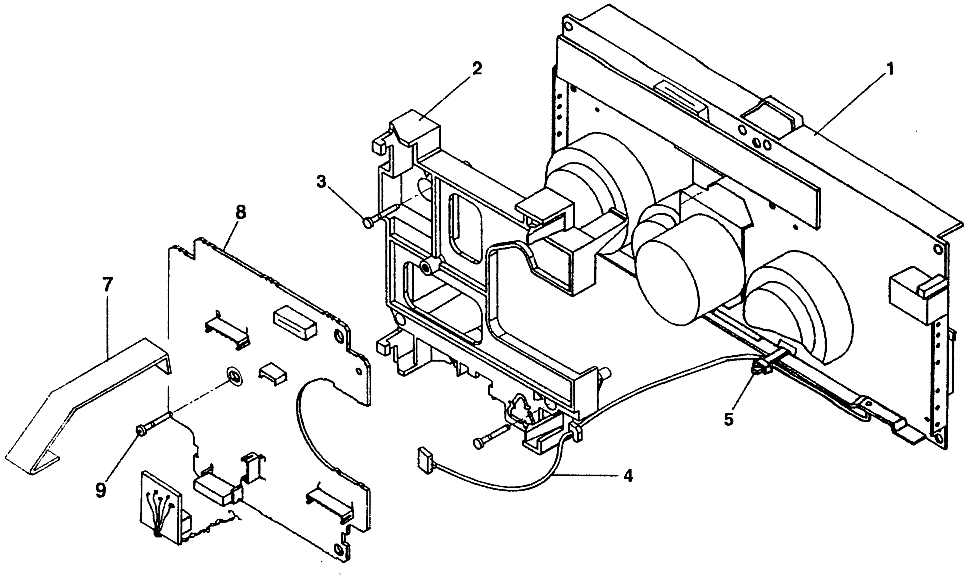
SERVO CONTROL CIRCUIT


1
2
3
4
5
6
7
8
A
B
C
D
E
DECK AB
PHOTO_A
SOL_A
CR02_A
H
L
Gnd
mode_B
Vcc
sol_B
photo_B
CrO2_B
Rec_FWD
Rec_RVS
1770
# 1760
9.3V
NORM SPEED
HIGH SPEED
+MOTOR
7612
BC807-25
7613
BC807-25
7614
BC807-25
7616
BC857B
7618
BC847B
7619
BC847B
7620
BC847B
7622
BC847B
7623
BC847B
7624
BC847B
7610
HEF4094BT
3618 8K2
3616 10K
3620 4K7
#3622 4K7
4781
7.0V
3628 100K
3630 470R
3674 4K7
3672 4K7
3623 100K
3625 1K
3679 47K
3678 47K
3676 47K
3680 47K
3624 100K
3626 1K
3614 27K
6612 1N4003
6611 1N4003
6614 1N4148
#4784
SOL_A
PHOTO_A
CR02_A
+MOTOR
1703
3613 27K
+5
3601 2K2
3603 2K2
3605 2K2
3602 27K
3604 56K
3606 120K
Rec_RVS
CRA TO 3756
GND_M
GND_P
2A2
HS
CRA
CRB
3685 100K
TO 3754 3757
HS
# 4782
# 4783
Os'
Os
STR
D
CP
VSS
VDD
E0
O3
O7
O5
O6
O4
O0
O1
O2
NS/HS
TO 3740 7740 3691
2A2
MOT
SOL_B
SOL_A
TO 3786 3779 6774 7730
3749
REC
REC
1A0
1A0
TO 3753 6782 7710
2A1
2A1 TO 7740
CRB
TO 6778 7730
3611 2K2
3609 2K2
3607 2K2
3612 56K
3610 120K
3608 27K
3686 100K
2623 470p
2622 470p
2621 1n
2624 100n
2625 100n
STROBE
DATA
CLK
GND_P
+5
AD1
AD2
1706
TO/FROM FRONT
* 4795
DC Voltages measured with Dubbing Fe to Fe
EVM
# For Provision Only
SERVO CONTROL CCTRY

* For Versions detection during PCB testing : values for 4795

	Version	In
1.	ND / DD /FR	NO
2.	ND / DD /FF	YES

1703	B1
1706	E1
1760	B8
1770	B7
2621	D2
2622	D2
2623	D2
2624	E2
2625	E4
3601	C2
3602	C2
3603	C2
3604	C2
3605	C3
3606	C3
3607	C6
3608	D6
3609	C6
3610	D6
3611	C6
3612	D6
3613	B2
3614	C6
3616	A5
3618	A4
3620	A4
3622	A4
3623	B3
3624	B6
3625	B3
3626	B6
3628	A5
3630	A6
3672	B4
3674	B5
3676	C5
3678	B5
3679	B3
3680	C5
3685	D2
3686	E6
4781	A5
4782	C4
4783	C3
4784	A1
4795	E3
6611	B2
6612	B6
6614	B4
7610	D4
7612	A6
7613	A3
7614	A6
7616	A4
7618	B6
7619	B3
7620	B6
7622	B5
7623	D2
7624	D6



ETF6 TAPE MODULE EXPLODED VIEW

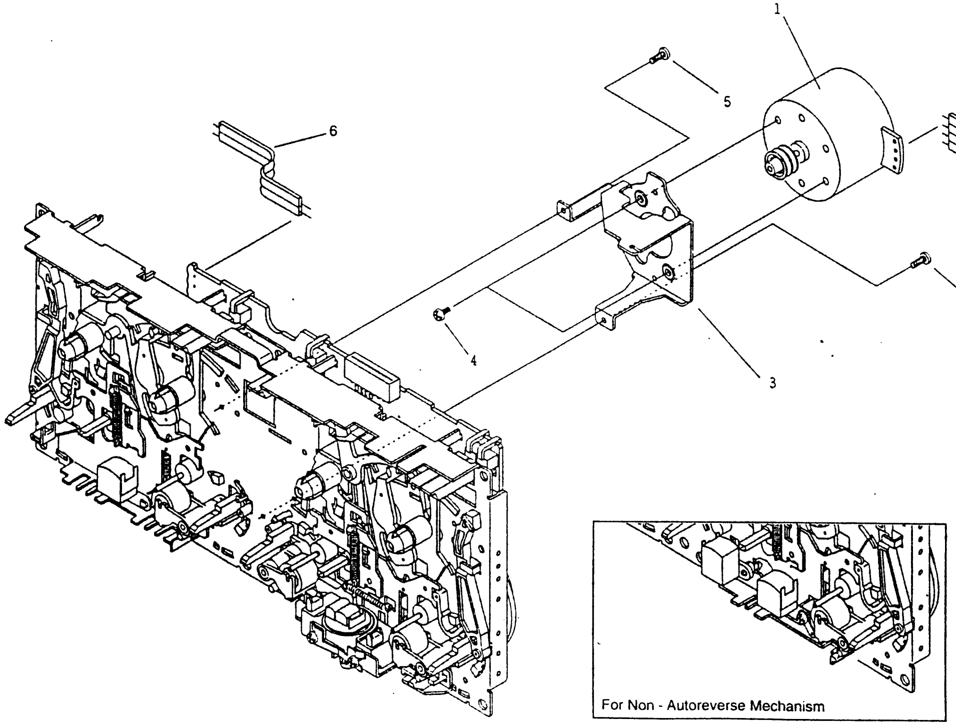
1	4822 691 10673	Autoreverse Mech. CWC44FR02
1	4822 691 10672	Non-Autoreverse Mech. CWC44FF01
3	-	Screw M2 x 16
7	4822 320 12245	Flex Cable 13 pin 7,5 cm
9	-	Screw D3 x 10

Note: Only the parts mentioned in this list are normal service spare parts.

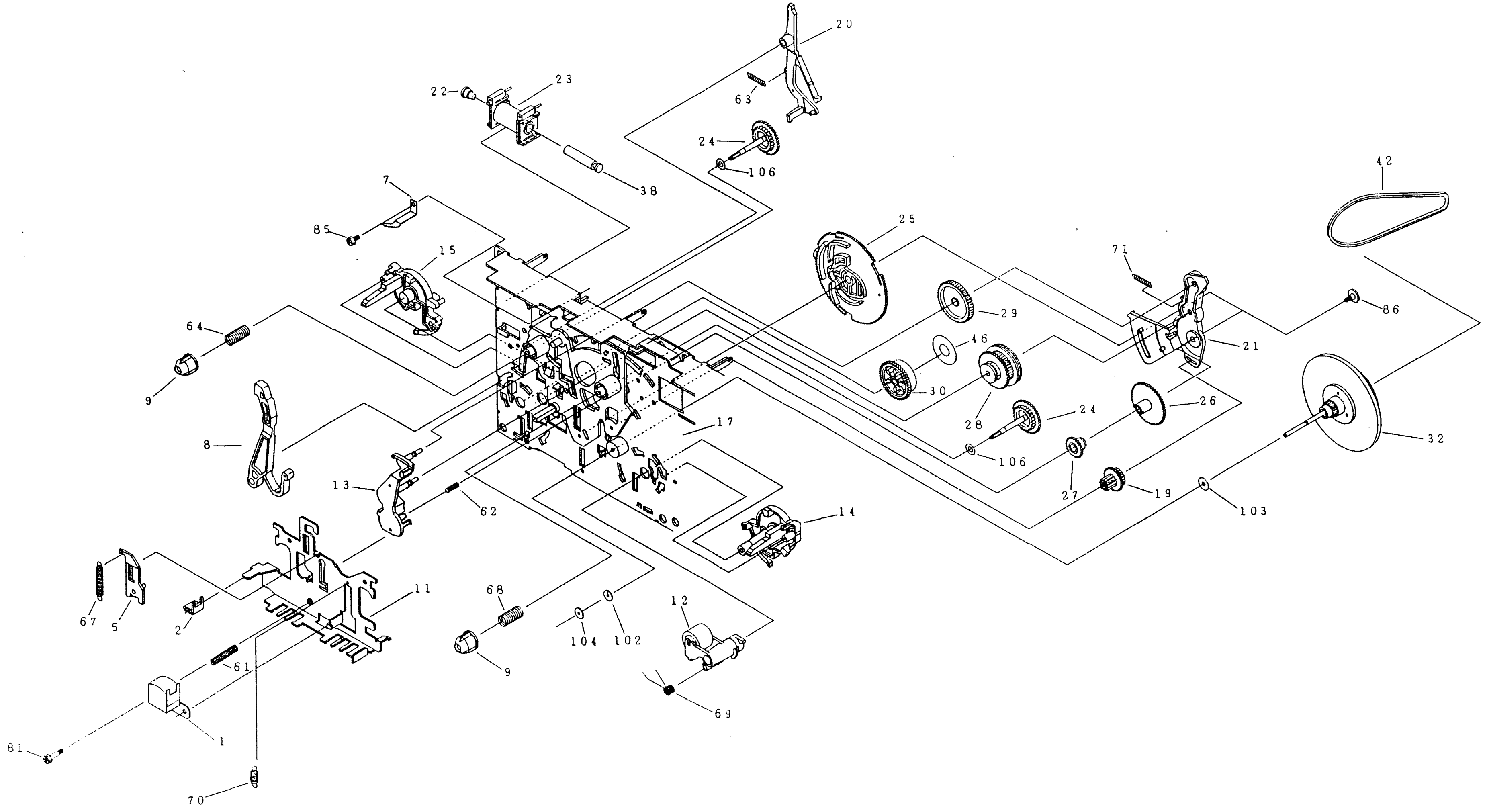
TAPE MECHANISM - MOTOR EXPLODED VIEW

1	4822 361 11055	Motor Assembly
4	-	Screw M2,6 x 4
5	-	Screw M2 x 3

Note: Only the parts mentioned in this list are normal service spare parts.


1
2
5
6
5
4
3
For Non - Autoreverse Mechanism

TAPE MECHANISM A - PLAY


20
23
22
63
24
106
38
7
85
15
25
42
71
86
29
46
21
64
30
26
9
28
24
17
8
106
32
13
27
19
62
103
14
11
68
12
67
5
2
104
102
61
9
69
1
81
70

MECHANICAL PARTS - PLAY MECHANISM

1	4822 249 10397	MS15RAA2N1
12	4822 402 10972	Pinch Arm Assembly Right
23	4822 157 11498	Coil Assembly
32	4822 528 11244	Flywheel Assembly RV
42	4822 358 10168	Belt AF
69	4822 492 11542	Spring
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer

Note: Only the parts mentioned in this list are normal service spare parts.

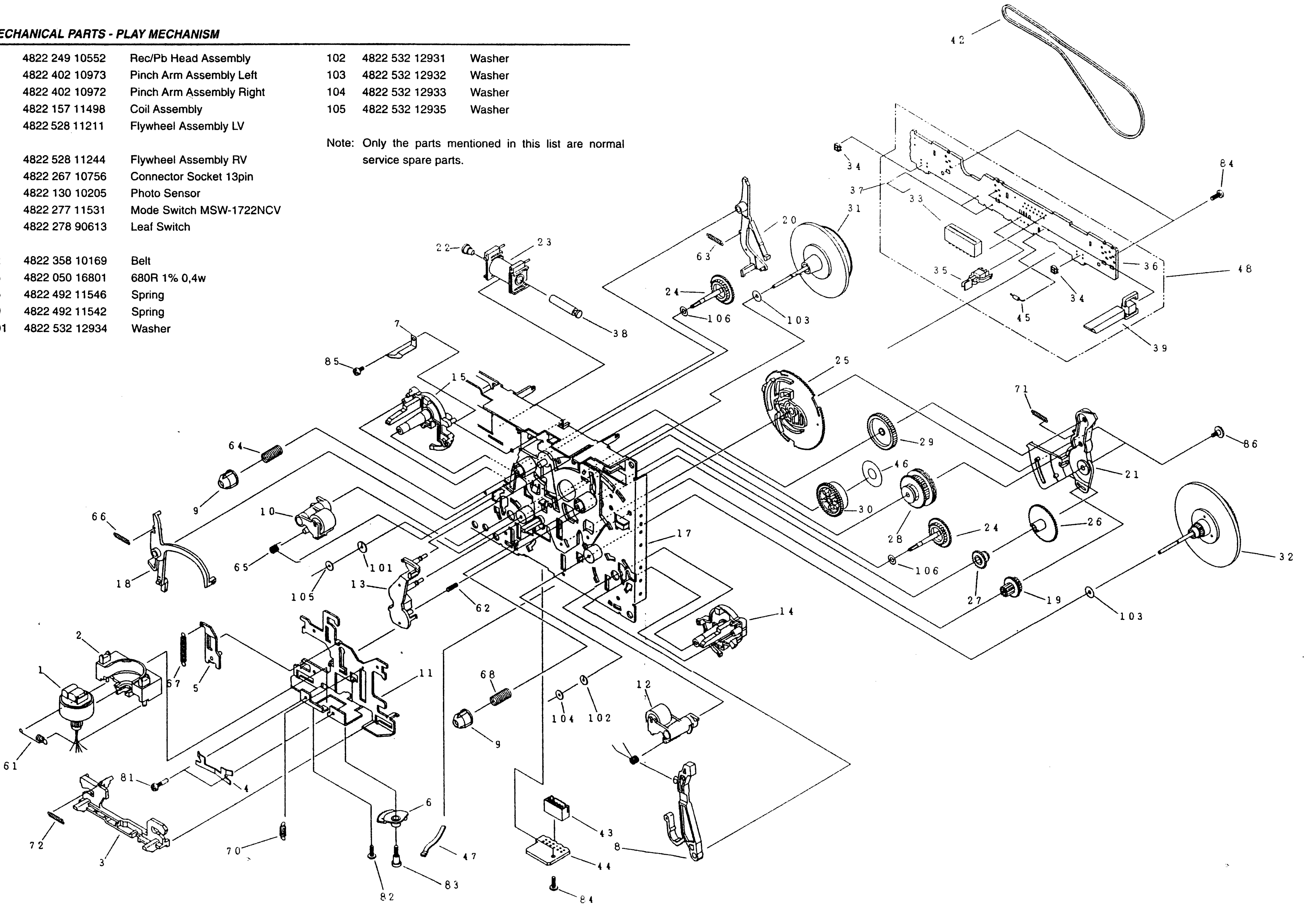
TAPE MECHANISM B - RECORD/PLAYBACK

(Autoreverse Version)

MECHANICAL PARTS - PLAY MECHANISM

1	4822 249 10552	Rec/Pb Head Assembly
10	4822 402 10973	Pinch Arm Assembly Left
12	4822 402 10972	Pinch Arm Assembly Right
23	4822 157 11498	Coil Assembly
31	4822 528 11211	Flywheel Assembly LV
32	4822 528 11244	Flywheel Assembly RV
33	4822 267 10756	Connector Socket 13pin
34	4822 130 10205	Photo Sensor
35	4822 277 11531	Mode Switch MSW-1722NCV
39	4822 278 90613	Leaf Switch
42	4822 358 10169	Belt
45	4822 050 16801	680R 1% 0,4w
65	4822 492 11546	Spring
69	4822 492 11542	Spring
101	4822 532 12934	Washer
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer
105	4822 532 12935	Washer

Note: Only the parts mentioned in this list are normal service spare parts.


42
84
34
37
33
31
20
36
48
35
34
45
39
63
24
106
103
22
23
38
7
85
15
25
71
86
29
46
21
64
9
30
28
24
26
32
66
10
17
106
27
19
103
18
65
101
105
13
62
14
2
1
67
5
11
68
12
104
102
9
61
81
4
6
72
70
47
43
8
44
3
82
83
84

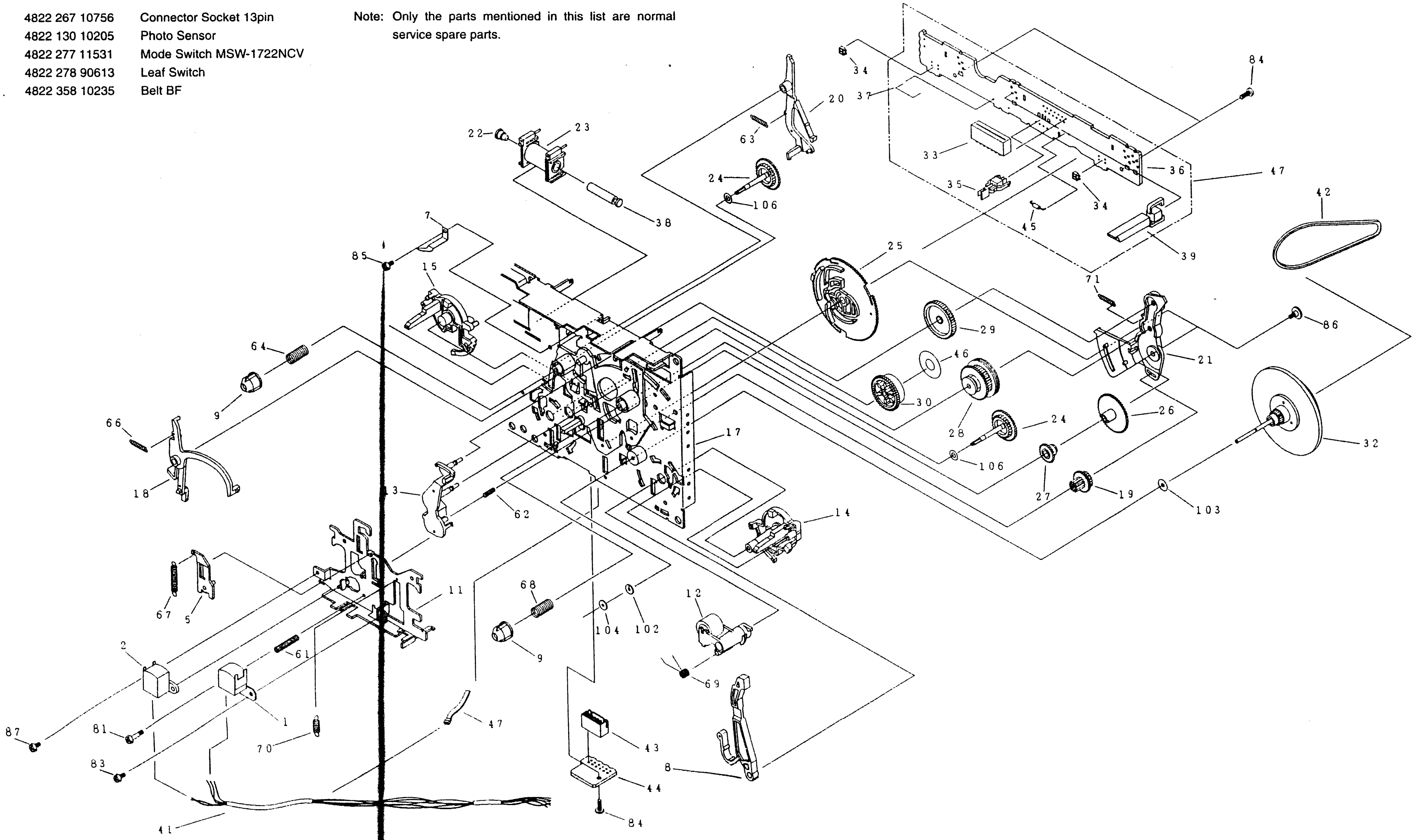
TAPE MECHANISM B - RECORD/PLAYBACK

(Non-Autoreverse Version)

MECHANICAL PARTS - PLAY MECHANISM

1	4822 249 10397	Rec/Pb Head Assembly
2	4822 249 40303	Erase Head
12	4822 402 10972	Pinch Arm Assembly Right
23	4822 157 11498	Coil Assembly
32	4822 528 11244	Flywheel Assembly RV
33	4822 267 10756	Connector Socket 13pin
34	4822 130 10205	Photo Sensor
35	4822 277 11531	Mode Switch MSW-1722NCV
39	4822 278 90613	Leaf Switch
42.	4822 358 10235	Belt BF
45	4822 050 16801	680R 1% 0,4w
69	4822 492 11542	Spring
102	4822 532 12931	Washer
103	4822 532 12932	Washer
104	4822 532 12933	Washer

Note: Only the parts mentioned in this list are normal service spare parts.


34
37
20
84
63
33
36
47
22
23
24
106
35
34
45
42
39
38
7
85
15
25
71
29
86
64
46
21
9
30
26
28
24
66
17
106
32
18
3
62
27
19
103
14
11
68
12
67
5
104
102
2
61
9
69
1
47
87
81
70
43
83
8
44
41
84

MISCELLANEOUS

1770	4822 267 10738	Flex Cable Socket 13Pin

CAPACITORS

2621	5322 122 34123	1nF 10% 50V
2622	5322 122 34099	470pF 10% 63V
2623	5322 122 34099	470pF 10% 63V
2624	4822 126 13296	100nF 10% 16V
2625	4822 126 13296	100nF 10% 16V
2701	5322 122 33538	150pF 2% 63V
2702	5322 122 33538	150pF 2% 63V
2703	5322 122 32531	100pF 5% 50V
2704	5322 122 32531	100pF 5% 50V
2705	4822 122 33575	220pF 5% 50V
2706	4822 122 33575	220pF 5% 50V
2707	5322 122 34099	470pF 10% 63V
2708	5322 122 34099	470pF 10% 63V
2709	5322 122 31863	330pF 5% 50V
2710	5322 122 31863	330pF 5% 50V
2711	5322 122 32531	100pF 5% 50V
2712	5322 122 32531	100pF 5% 50V
2713	4822 124 41579	10µF 20% 50V
2714	4822 124 41579	10µF 20% 50V
2715	4822 124 40196	220µF 20% 16V
2716	4822 124 40196	220µF 20% 16V
2717	4822 122 33177	10nF 20% 50V
2718	4822 122 33177	10nF 20% 50V
2719	4822 126 12105	33nF 5% 63V
2720	4822 126 12105	33nF 5% 63V
2721	5322 122 31866	6,8nF 10% 63V
2722	5322 122 31866	6,8nF 10% 63V
2723	4822 126 13188	15nF 5% 63V
2724	4822 126 13188	15nF 5% 63V
2725	5322 126 10223	4,7nF 10% 63V
2726	5322 126 10223	4,7nF 10% 63V
2727	5322 122 34123	1nF 10% 50V
2728	5322 122 34123	1nF 10% 50V
2729	4822 122 32541	27nF 10% 63V
2730	4822 122 32541	27nF 10% 63V
2733	5322 122 34099	470pF 10% 63V
2734	5322 122 34099	470pF 10% 63V
2735	4822 126 13296	100nF 10% 16V
2737	4822 126 13296	100nF 10% 16V
2738	4822 126 13296	100nF 10% 16V
2741	4822 126 11585	22nF +80/-20% 25V
2742	5322 122 32654	22nF 10% 63V
2743	5322 122 32654	22nF 10% 63V
2744	4822 126 13296	100nF 10% 16V
2760	4822 126 13296	100nF 10% 16V
2761	4822 124 22263	220µF 20% 25V
2762	4822 124 40246	4,7µF 20% 63V
2763	4822 124 40433	47µF 20% 25V
2765	4822 124 40433	47µF 20% 25V
2769	5322 122 34099	470pF 10% 63V
2770	5322 122 34099	470pF 10% 63V
2780	4822 124 81151	22µF 50V
2781	4822 122 33177	10nF 20% 50V
2782	5322 126 10223	4,7nF 10% 63V
2784	4822 121 51305	15nF 10% 50V
2785	4822 124 40242	1µF 20% 63V
2786	5322 122 32531	100pF 5% 50V
2787	4822 126 12105	33nF 5% 63V

RESISTORS

3601	4822 117 11449	2k2 1% 0,1W
3602	4822 051 20273	27k 5% 0,1W
3603	4822 117 11449	2k2 1% 0,1W
3604	4822 051 20563	56k 5% 0,1W
3605	4822 117 11449	2k2 1% 0,1W
3606	4822 051 20124	120k 5% 0,1W
3607	4822 116 52256	2k2 5% 0,5W
3608	4822 051 20273	27k 5% 0,1W
3609	4822 116 52256	2k2 5% 0,5W
3610	4822 051 20124	120k 5% 0,1W
3611	4822 116 52256	2k2 5% 0,5W
3612	4822 051 20563	56k 5% 0,1W
3613	4822 051 20273	27k 5% 0,1W
3614	4822 051 20273	27k 5% 0,1W
3616	4822 117 10833	10k 1% 0,1W
3618	4822 051 20822	8k2 5% 0,1W
3620	5322 100 11542	Trimmer 4k7 30% 0,1W
3623	4822 051 20104	100k 5% 0,1W
3624	4822 051 20104	100k 5% 0,1W
3625	4822 051 10102	1k 2% 0,25W
3626	4822 051 10102	1k 2% 0,25W
3628	4822 051 20104	100k 5% 0,1W
3630	4822 051 20471	470R 5% 0,1W
3672	4822 051 20472	4k7 5% 0,1W
3674	4822 116 52283	4k7 5% 0,5W
3676	4822 117 10834	47k 1% 0,1W
3678	4822 117 10834	47k 1% 0,1W
3679	4822 117 10834	47k 1% 0,1W
3680	4822 117 10834	47k 1% 0,1W
3685	4822 116 52234	100k 5% 0,5W
3686	4822 051 20104	100k 5% 0,1W
3701	4822 117 11503	220R 1% 0.1W
3702	4822 117 11503	220R 1% 0.1W
3703	4822 117 11503	220R 1% 0.1W
3704	4822 117 11503	220R 1% 0.1W
3705	4822 117 11503	220R 1% 0.1W
3706	4822 117 11503	220R 1% 0.1W
3707	4822 051 20101	100R 5% 0,1W
3708	4822 051 20101	100R 5% 0,1W
3709	4822 051 20688	6R8 5% 0,1W
3710	4822 051 20688	6R8 5% 0,1W
3711	4822 051 20154	150k 5% 0,1W
3712	4822 051 20154	150k 5% 0,1W
3713	4822 051 20109	10R 5% 0,1W
3714	4822 051 20109	10R 5% 0,1W
3715	4822 051 20182	1k8 5% 0,1W
3716	4822 051 20182	1k8 5% 0,1W
3717	4822 117 11449	2k2 1% 0,1W
3718	4822 117 11449	2k2 1% 0,1W
3719	4822 051 20472	4k7 5% 0,1W
3720	4822 051 20472	4k7 5% 0,1W
3721	4822 051 20562	5k6 5% 0,1W
3722	4822 051 20562	5k6 5% 0,1W
3723	4822 117 11383	12k 1% 0,1W For Autoreverse
3723	4822 051 20153	15k 5% 0,1W For Non-autorev.
3724	4822 117 11383	12k 1% 0,1W For Autoreverse
3724	4822 051 20153	15k 5% 0,1W For Non-autorev.
3725	4822 051 20109	10R 5% 0,1W
3726	4822 051 20109	10R 5% 0,1W
3727	4822 051 20562	5k6 5% 0,1W
3728	4822 051 20562	5k6 5% 0,1W
3729	4822 117 12955	2k7 1% 0,1W
3730	4822 117 12955	2k7 1% 0,1W
3731	4822 117 11507	6k8 1% 0,1W
3732	4822 117 11507	6k8 1% 0,1W
3733	4822 051 10102	1k 2% 0,25W
3734	4822 051 10102	1k 2% 0,25W
3735	4822 051 20223	22k 5% 0,1W
3736	4822 051 20223	22k 5% 0,1W
3741	4822 117 11449	2k2 1% 0,1W
3742	4822 117 11449	2k2 1% 0,1W
3743	4822 051 20122	1k2 5% 0,1W For Autoreverse
3743	4822 051 10102	1k 2% 0,25W For Non-autorev.
3744	4822 051 20122	1k2 5% 0,1W For Autoreverse
3744	4822 051 10102	1k 2% 0,25W For Non-autorev.
3745	4822 051 20332	3k3 5% 0,1W
3746	4822 051 20332	3k3 5% 0,1W
3748	4822 117 11449	2k2 1% 0,1W
3749	4822 117 10834	47k 1% 0,1W
3751	4822 117 10833	10k 1% 0,1W
3752	4822 051 20104	100k 5% 0,1W
3753	4822 051 20104	100k 5% 0,1W
3754	4822 051 20105	1M 5% 0,1W
3755	4822 051 20105	1M 5% 0,1W
3756	4822 051 20224	220k 5% 0,1W
3757	4822 051 20224	220k 5% 0,1W
3758	4822 117 10833	10k 1% 0,1W
3759	4822 117 10833	10k 1% 0,1W
3760	4822 051 20121	120R 5% 0,1W
3761	4822 116 83864	10k 5% 0,5W
3762	4822 117 11454	820R 1% 0,1W
3763	4822 051 20154	150k 5% 0,1W
3764	4822 116 83872	220R 5% 0,5W
3765	4822 051 20393	39k 5% 0,1W
3766	4822 051 20475	4M7 5% 0,1W
3767	4822 051 20475	4M7 5% 0,1W
3768	4822 117 10833	10k 1% 0,1W
3769	4822 117 11383	12k 1% 0,1W For Autoreverse
3769	4822 051 20822	8k2 5% 0,1W For Non-autorev.
3770	4822 117 11139	1k5 1% 0,1W
3771	4822 051 20122	1k2 5% 0,1W
3772	4822 051 20472	4k7 5% 0,1W For Autoreverse
3772	4822 051 20562	5k6 5% 0,1W For Non-autorev.
3773	5322 100 11542	Trimmer 4k7 30% 0,1W
3774	4822 117 10833	10k 1% 0,1W For Autoreverse
3774	4822 051 20822	8k2 5% 0,1W For Non-autorev.
3775	4822 051 20478	4R7 5% 0,1W
3776	4822 117 11507	6k8 1% 0,1W
3777	4822 117 10353	150R 1% 0,1W
3778	4822 052 10688 △	6R8 5% 0,33W
3779	4822 051 20334	330k 5% 0,1W
3780	4822 051 20105	1M 5% 0,1W
3781	4822 051 20475	4M7 5% 0,1W
3784	4822 051 10102	1k 2% 0,25W
3786	4822 051 20223	22k 5% 0,1W
3787	4822 051 20105	1M 5% 0,1W
3788	4822 051 20105	1M 5% 0,1W
3789	4822 117 10834	47k 1% 0,1W
4701	4822 051 20008	0R Jumper 0805
4702	4822 051 20008	0R Jumper 0805
4703	4822 051 20008	0R Jumper 0805
4704	4822 051 20008	0R Jumper 0805
4705	4822 051 20008	0R Jumper 0805
4706	4822 051 20008	0R Jumper 0805
4707	4822 051 20008	0R Jumper 0805
4708	4822 051 20008	0R Jumper 0805
4709	4822 051 20008	0R Jumper 0805
4710	4822 051 20008	0R Jumper 0805
4711	4822 051 20008	0R Jumper 0805
4712	4822 051 20008	0R Jumper 0805
4713	4822 051 20008	0R Jumper 0805
4714	4822 051 20008	0R Jumper 0805
4715	4822 051 20008	0R Jumper 0805
4716	4822 051 20008	0R Jumper 0805
4717	4822 051 20008	0R Jumper 0805
4718	4822 051 20008	0R Jumper 0805
4719	4822 051 20008	0R Jumper 0805
4720	4822 051 20008	0R Jumper 0805
4721	4822 051 20008	0R Jumper 0805
4722	4822 051 20008	0R Jumper 0805
4723	4822 051 20008	0R Jumper 0805
4724	4822 051 20008	0R Jumper 0805
4725	4822 051 20008	0R Jumper 0805
4726	4822 051 20008	0R Jumper 0805
4727	4822 051 20008	0R Jumper 0805

RESISTORS

4728	4822 051 20008	0R Jumper 0805
4729	4822 051 20008	0R Jumper 0805
4730	4822 051 20008	0R Jumper 0805
4731	4822 051 20008	0R Jumper 0805
4732	4822 051 20008	0R Jumper 0805
4733	4822 051 20008	0R Jumper 0805
4734	4822 051 20008	0R Jumper 0805
4735	4822 051 20008	0R Jumper 0805
4736	4822 051 20008	0R Jumper 0805
4737	4822 051 20008	0R Jumper 0805
4738	4822 051 20008	0R Jumper 0805
4739	4822 051 20008	0R Jumper 0805
4740	4822 051 20008	0R Jumper 0805
4741	4822 051 20008	0R Jumper 0805
4742	4822 051 20008	0R Jumper 0805
4781	4822 051 20008	0R Jumper 0805
4790	4822 051 20008	0R Jumper 0805
4794	4822 051 20008	0R Jumper 0805
4795	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5701	4822 156 21721	Coil 2,2μH 10%
5703	4822 156 20946	Osc Coil 100kHz

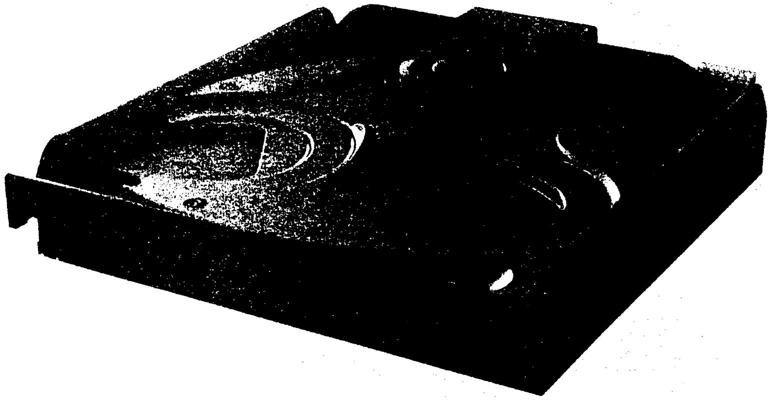
DIODES

6611	4822 130 31878	1N4003G
6612	4822 130 31878	1N4003G
6614	4822 130 30621	1N4148
6770	4822 130 30621	1N4148
6771	4822 130 30621	1N4148
6772	4822 130 30621	1N4148
6773	4822 130 30621	1N4148
6774	4822 130 30621	1N4148
6775	4822 130 30621	1N4148
6776	4822 130 30621	1N4148
6777	4822 130 34382	BZX79-F8V2
6778	4822 130 30621	1N4148
6782	4822 130 30621	1N4148
6785	4822 130 30621	1N4148
6786	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7610	5322 209 11306	HEF4094BT
7612	5322 130 60845	BC807-25
7613	5322 130 60845	BC807-25
7614	5322 130 60845	BC807-25
7616	5322 130 60508	BC857B
7618	4822 130 60511	BC847B
7619	4822 130 60511	BC847B
7620	4822 130 60511	BC847B
7622	4822 130 60511	BC847B
7623	4822 130 60511	BC847B
7624	4822 130 60511	BC847B
7710	4822 209 32919	HEF4952BT
7720	4822 209 32918	AN7318S
7730	4822 209 32919	HEF4952BT
7740	4822 209 32919	HEF4952BT
7780	4822 130 60511	BC847B
7781	4822 130 42804	BC817-25
7782	4822 130 44568	BC557B
7783	4822 130 60511	BC847B
7784	5322 130 60508	BC857B
7786	4822 130 63494	J111
7787	4822 130 60511	BC847B
7791	4822 130 60511	BC847B
7792	4822 130 60511	BC847B

Note: Only the parts mentioned in this list are normal service spare parts.



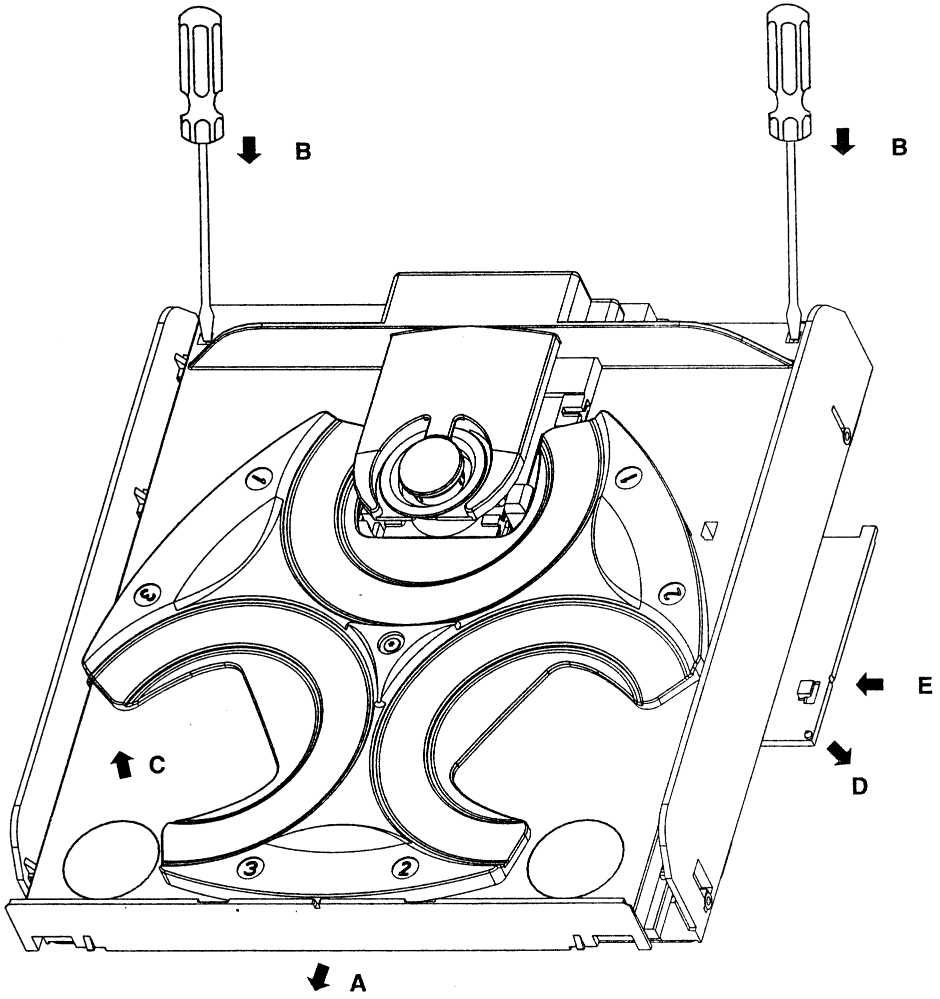
3CDC Module

(3 Disc Carrousel Changer)

TABLE OF CONTENTS

Demounting Hints 10-2
Servicing Hints 10-3
Lubrication Instructions 10-4
ESD Warnings 10-6
Blockdiagram 10-7
Wiring Diagram 10-8
Connector Board 10-9
Optical Out (not on all versions) 10-9
Component Layout Main Board 10-10
Circuit Diagram part1 10-11
Component Layout Main Board 10-12
Circuit Diagram part2 10-13
Exploded View 10-14
Mechanical Partslist 10-14
Electrical Partslist 10-15

Demounting Hints



Demounting of Drawer

→ **A** Pull drawer outwards
→ **B** Unlock drawer with screwdriver
→ **C** Lift drawer to demount from chassis

Demounting of Flex Plate

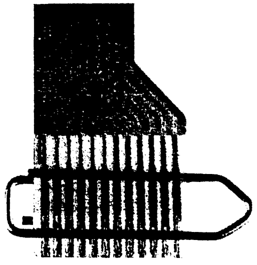
→ **D** Lift plate to unlock pin from bottom plate
→ **E** Move plate inwards to demount from bottom plate

Servicing Hints

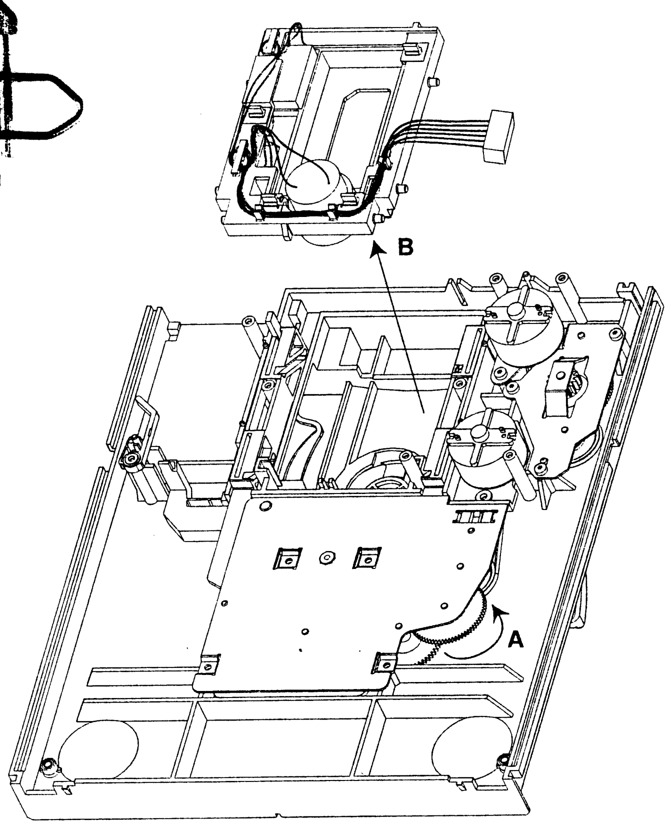
Replacement of CD Drive

See also exploded view of changer mechanism.

1. Demount flex plate (pos 140).
2. Demount printed circuit board: remove 6 screws and desolder lips of tray motor and carrousel motor.
3. Disconnect flexfoil and JST connector of CD drive from Printed circuit board. Shortcircuit the flexfoil with a paperclip to protect the laser against ESD.
4. Remove 2 screws (pos 107,108) and demount CD drive lockings (pos 105,106).
5. Turn gearwheel (pos 42) of disc change mechanism by finger to move CD drive support in upper position as shown in picture below Ⓐ.
6. Demount CD drive support (pos 95) Ⓑ.
7. Replace CD drive (pos 100). The wire tree of JST connector has to be desoldered and resoldered on the new CD drive again.



CD drive flex foil

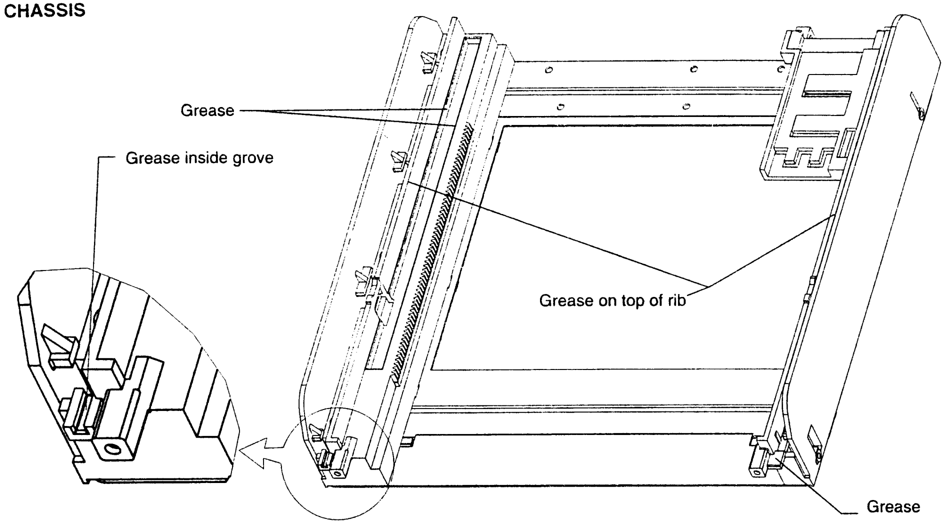


Mounting of Carrousel

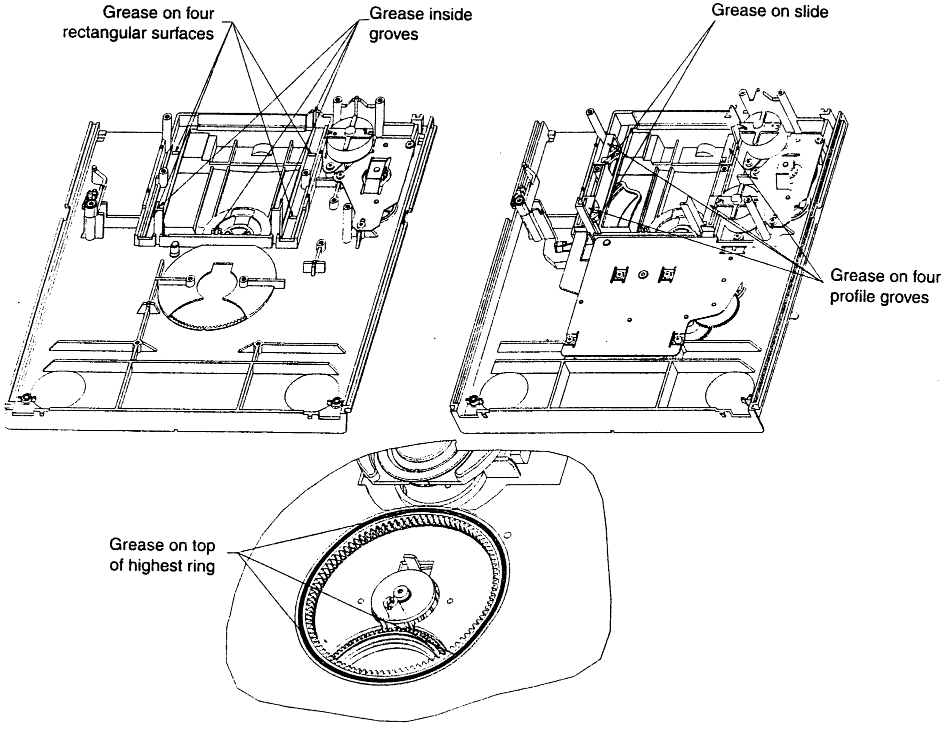
1. Turn gearwheel (pos 42) of disc change mechanism by finger until CD drive is in play position.
2. Mount carrousel (pos 115) so that disc is positioned right on turntable. Carrousel position number doesn´t matter.

Lubrication Instructions

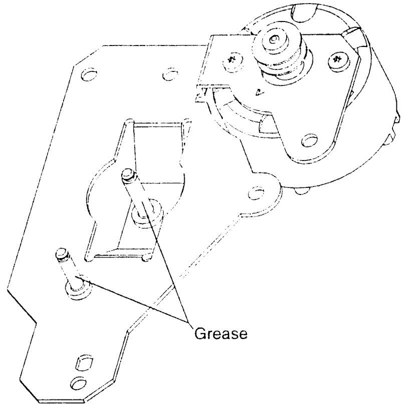
CHASSIS


Grease
Grease inside grove
Grease on top of rib
Grease

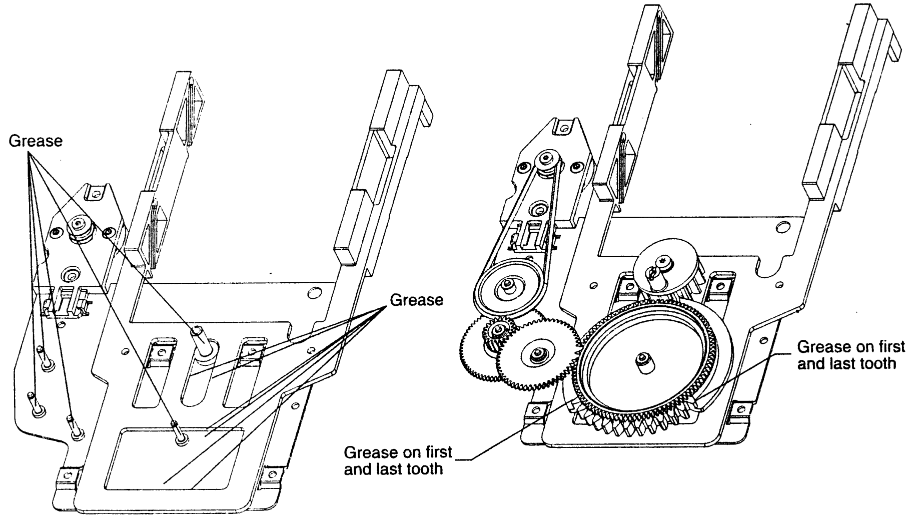
DRAWER


Grease on four rectangular surfaces
Grease inside groves
Grease on slide
Grease on four profile groves
Grease on top of highest ring

DRAWER MECHANISM



DISC CHANGE MECHANISM


Grease
Grease
Grease on first and last tooth
Grease on first and last tooth

Use only grease **Polylub GLY 801** service codenumber 4822 390 10136

WARNING

CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CDM MECHANISM. THAT´S WHY, BESIDES THE SAFETY MEASURES LIKE

- *SWITCH OFF POWER SUPPLY*
- *ESD PROTECTION*

ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

The following steps have to be done when replacing the CDM mechanism:

1. Disconnect old CD drive flexfoil from printed board
2. Connect paperclip to CD drive flexfoil to short-circuit flexfoil (fig.1)
3. Short-circuit printed board with **brass-sheet (4822 321 11197)** plugged into the flexfoil connector (fig.2)
4. Remove old CD drive mechanism
5. Position new CD mechanism in its studs
6. Remove short-circuit from printed board connector
7. Remove short-circuit from flexfoil of new CD drive
8. Connect new flexfoil to print connector (fig.3)

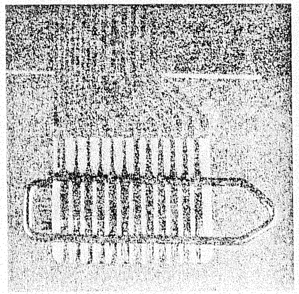


fig.1

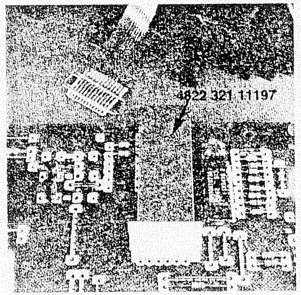


fig.2

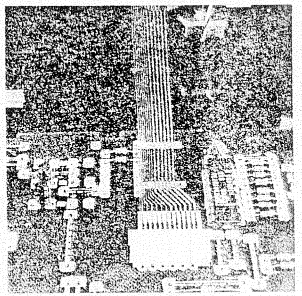
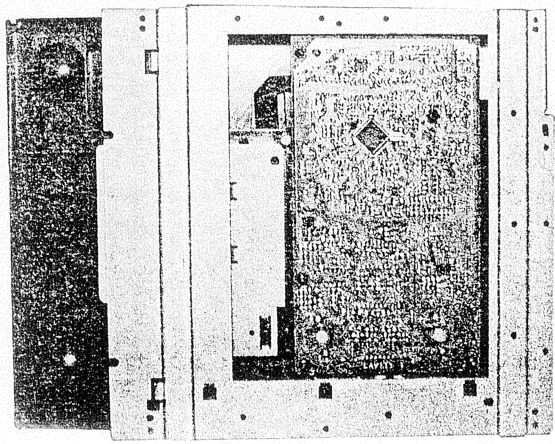
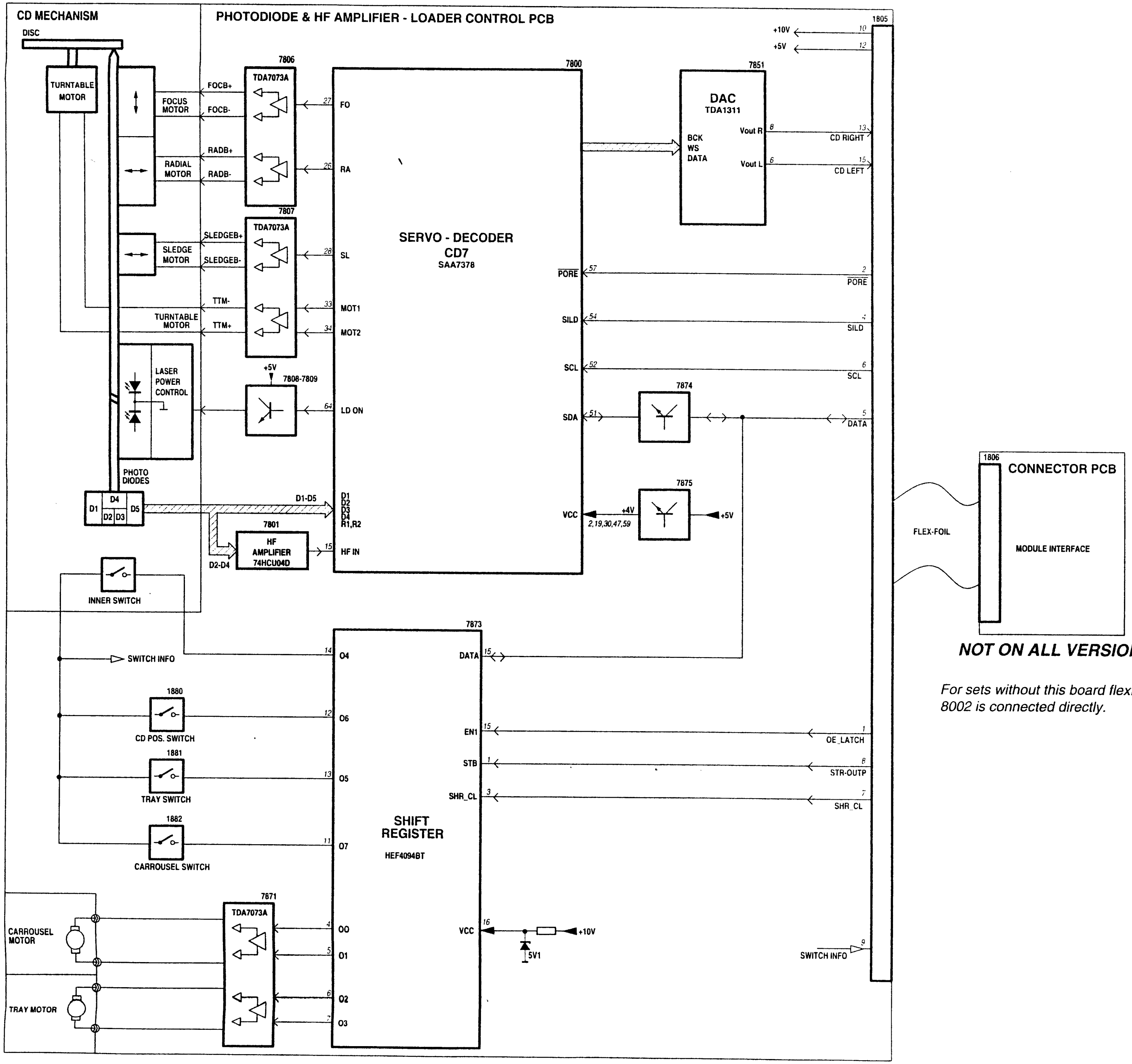


fig.3

Service Position



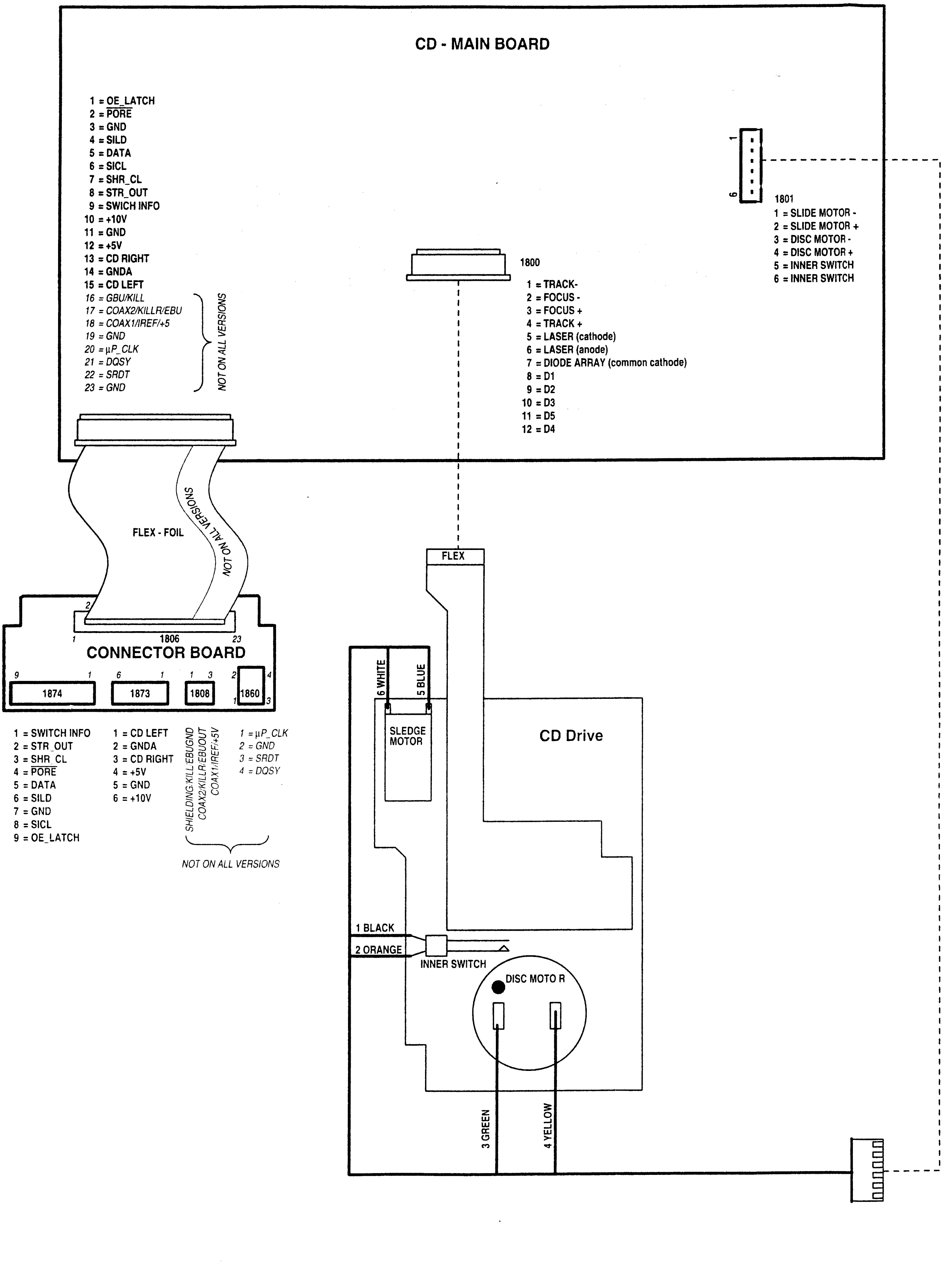
Blockdiagram


CD MECHANISM
DISC
TURNTABLE MOTOR
FOCUS MOTOR
RADIAL MOTOR
SLEDGE MOTOR
TURNTABLE MOTOR
LASER POWER CONTROL
PHOTO DIODES
D1
D2
D3
D4
D5
INNER SWITCH
PHOTODIODE & HF AMPLIFIER - LOADER CONTROL PCB
FOCB+
FOCB-
RADB+
RADB-
SLEDGEB+
SLEDGEB-
TTM-
TTM+
7806
TDA7073A
7807
TDA7073A
+5V
7808-7809
D1-D5
D2-D4
7801
HF AMPLIFIER 74HCU04D
7800
SERVO - DECODER
CD7
SAA7378
27 FO
26 RA
28 SL
33 MOT1
34 MOT2
64 LD ON
D1 D2 D3 D4 R1,R2
15 HF IN
PORE 57
SILD 54
SCL 52
SDA 51
VCC
+4V
2,19,30,47,59
7874
7875
+5V
7851
DAC
TDA1311
BCK
WS
DATA
Vout R 8
Vout L 6
+10V 10
+5V 12
1805
13 CD RIGHT
15 CD LEFT
2 PORE
4 SILD
6 SCL
5 DATA
1 OE_LATCH
8 STR-OUTP
7 SHR_CL
9 SWITCH INFO
SWITCH INFO
1880
CD POS. SWITCH
1881
TRAY SWITCH
1882
CARROUSEL SWITCH
7873
SHIFT REGISTER
HEF4094BT
14 O4
12 O6
13 O5
11 O7
DATA 15
EN1 15
STB 1
SHR_CL 3
VCC 16
+10V
5V1
CARROUSEL MOTOR
TRAY MOTOR
7871
TDA7073A
4 O0
5 O1
6 O2
7 O3
FLEX-FOIL
1806
CONNECTOR PCB
MODULE INTERFACE

NOT ON ALL VERSIONS

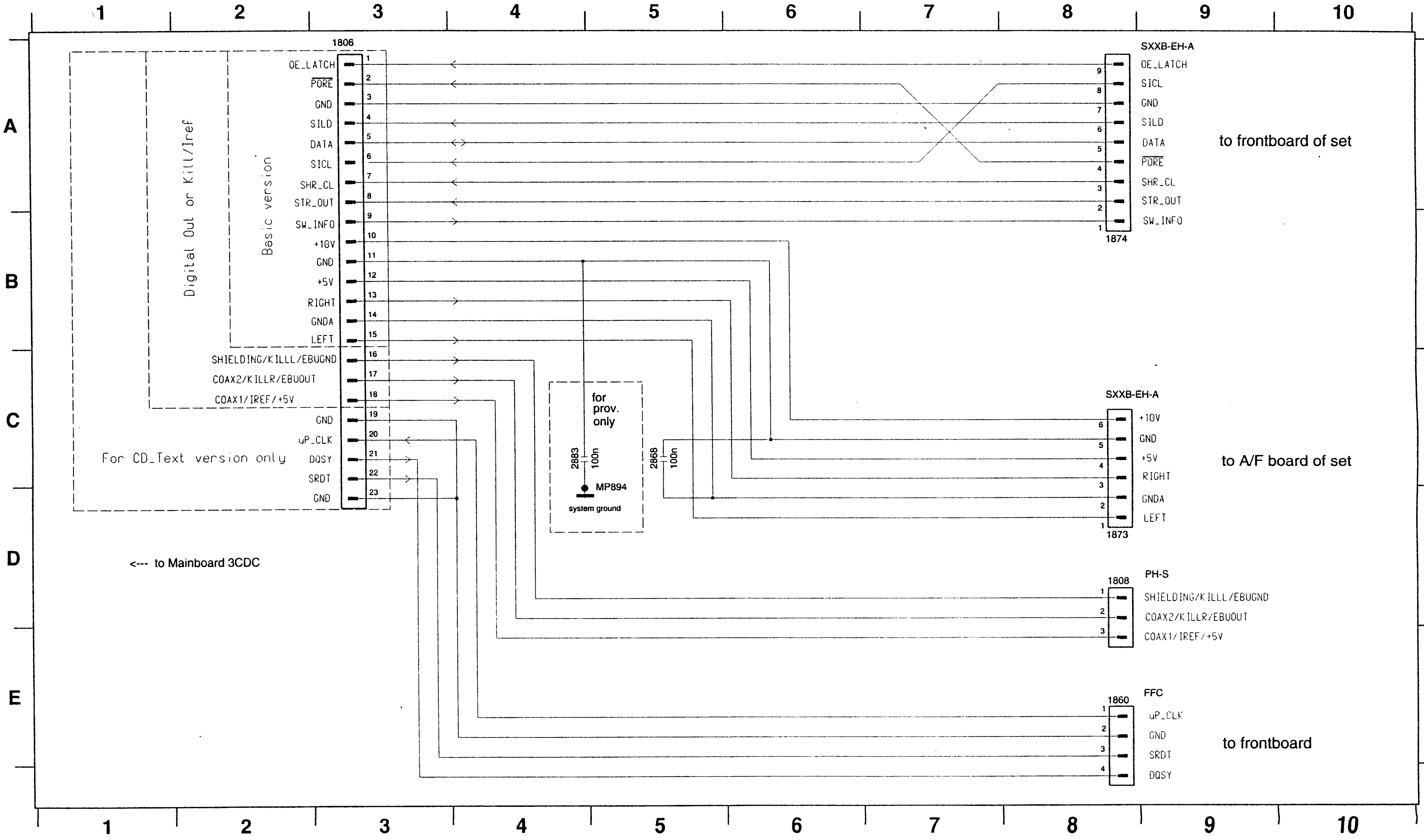
For sets without this board flexfoil 8002 is connected directly.

Wiring diagram


CD - MAIN BOARD
1 = OE_LATCH
2 = PORE
3 = GND
4 = SILD
5 = DATA
6 = SICL
7 = SHR_CL
8 = STR_OUT
9 = SWICH INFO
10 = +10V
11 = GND
12 = +5V
13 = CD RIGHT
14 = GNDA
15 = CD LEFT
16 = GBU/KILL
17 = COAX2/KILLR/EBU
18 = COAX1/IREF/+5
19 = GND
20 = µP_CLK
21 = DQSY
22 = SRDT
23 = GND
NOT ON ALL VERSIONS
1800
1 = TRACK-
2 = FOCUS -
3 = FOCUS +
4 = TRACK +
5 = LASER (cathode)
6 = LASER (anode)
7 = DIODE ARRAY (common cathode)
8 = D1
9 = D2
10 = D3
11 = D5
12 = D4
1
6
1801
1 = SLIDE MOTOR -
2 = SLIDE MOTOR +
3 = DISC MOTOR -
4 = DISC MOTOR +
5 = INNER SWITCH
6 = INNER SWITCH
FLEX - FOIL
NOT ON ALL VERSIONS
2
1
1806
23
CONNECTOR BOARD
9
1
6
1
1
3
2
4
1
3
1874
1873
1808
1860
1 = SWITCH INFO
2 = STR_OUT
3 = SHR_CL
4 = PORE
5 = DATA
6 = SILD
7 = GND
8 = SICL
9 = OE_LATCH
1 = CD LEFT
2 = GNDA
3 = CD RIGHT
4 = +5V
5 = GND
6 = +10V
SHIELDING/KILL/EBUGND
COAX2/KILLR/EBUOUT
COAX1/IREF/+5V
1 = µP_CLK
2 = GND
3 = SRDT
4 = DQSY
NOT ON ALL VERSIONS
FLEX
6 WHITE
5 BLUE
SLEDGE MOTOR
CD Drive
1 BLACK
2 ORANGE
INNER SWITCH
DISC MOTO R
3 GREEN
4 YELLOW

Circuit diagram Connector Board

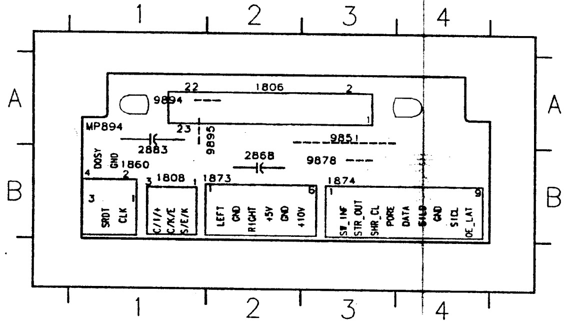
1806	A3	1860	E8	1874	B8	2883	C4
1808	D8	1873	D8	2868	C5		


1 2 3 4 5 6 7 8 9 10
A B C D E
1806
OE_LATCH
PORE
GND
SILD
DATA
SICL
SHR_CL
STR_OUT
SW_INFO
+10V
GND
+5V
RIGHT
GNDA
LEFT
SHIELDING/KILLL/EBUGND
COAX2/KILLR/EBUOUT
COAX1/IREF/+5V
GND
uP_CLK
DQSY
SRDT
GND
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Digital Out or Kill/Iref
Basic version
For CD_Text version only
<--- to Mainboard 3CDC
for prov. only
2883
100n
2868
100n
MP894
system ground
SXXB-EH-A
OE_LATCH
SICL
GND
SILD
DATA
PORE
SHR_CL
STR_OUT
SW_INFO
9 8 7 6 5 4 3 2 1
1874
to frontboard of set
SXXB-EH-A
+10V
GND
+5V
RIGHT
GNDA
LEFT
6 5 4 3 2 1
1873
to A/F board of set
1808
PH-S
SHIELDING/KILLL/EBUGND
COAX2/KILLR/EBUOUT
COAX1/IREF/+5V
1 2 3
1860
FFC
uP_CLK
GND
SRDT
DQSY
1 2 3 4
to frontboard

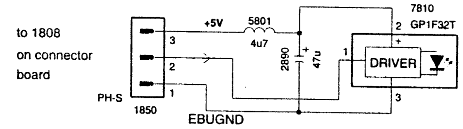
NOT ON ALL VERSIONS

Connector Board Copperside view

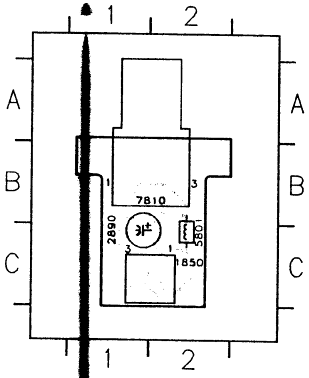
1806	A2
1808	B1
1860	B1
1873	B2
1874	B3
2868	B2
2883	B1
9851	A3
9878	B3
9894	A1
9895	A2
MP894	A1


1
2
3
4
A
B
22
1806
2
9894
1
MP894
23
9895
2883
9851
2868
9878
DOSY
GND
1860
4
2
3
1808
1
1873
6
1874
9
SPDT
CLK
C/I/+
C/K/E
S/E/K
LEFT
GND
RIGHT
+5V
GND
+10V
SW_INF
STR_OUT
SHR_CL
PORE
DATA
SALD
GND
SICL
OE_LAT

Circuit Diagram Optical out

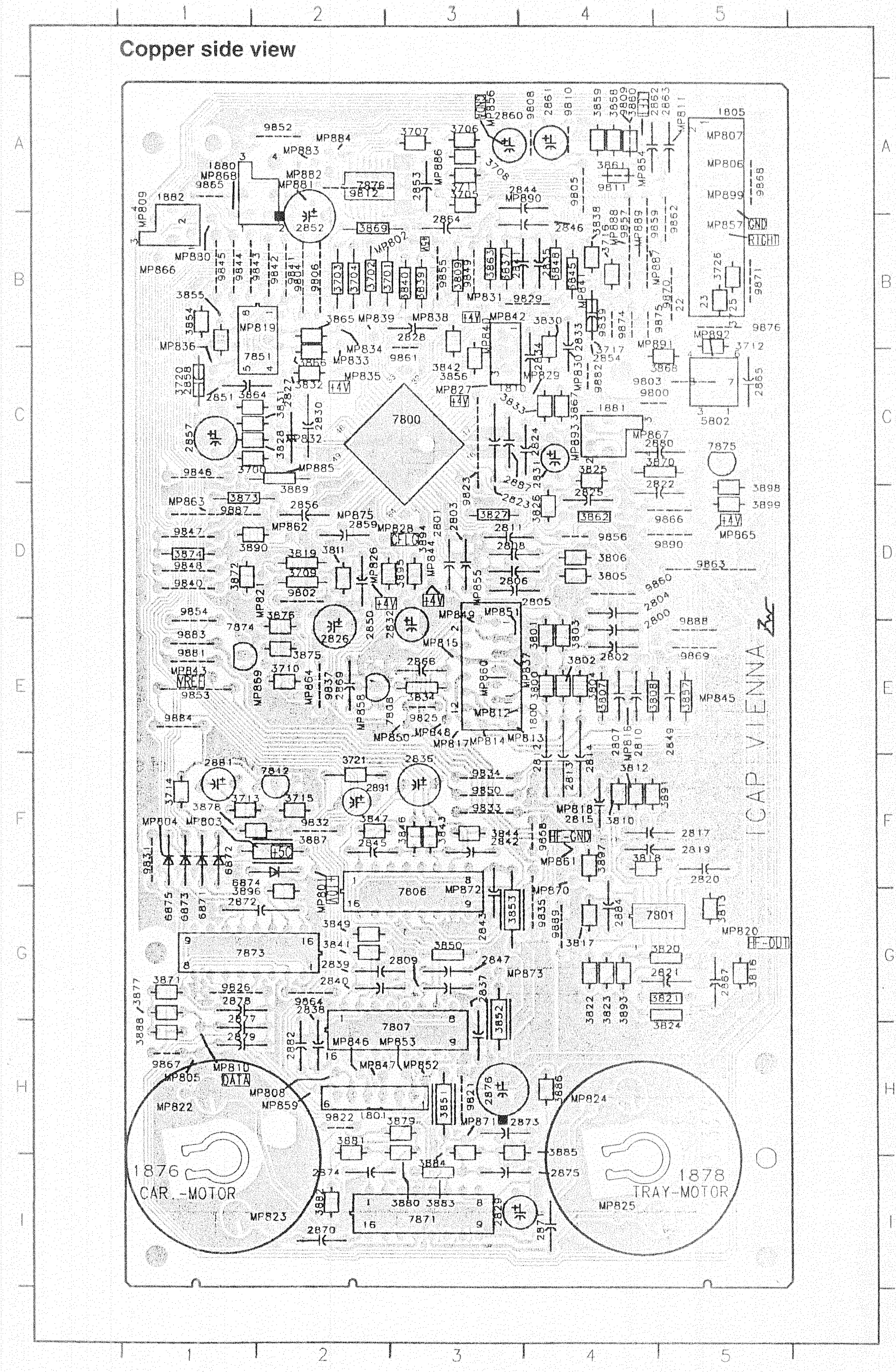

to 1808
on connector
board
PH-S
1850
3
2
1
+5V
5801
4u7
2890
47u
EBUGND
7810
GP1F32T
2
+
1
DRIVER
3

Component Layout Optical out


1
2
A
B
C
1
7810
3
2890
5801
3
1
1850

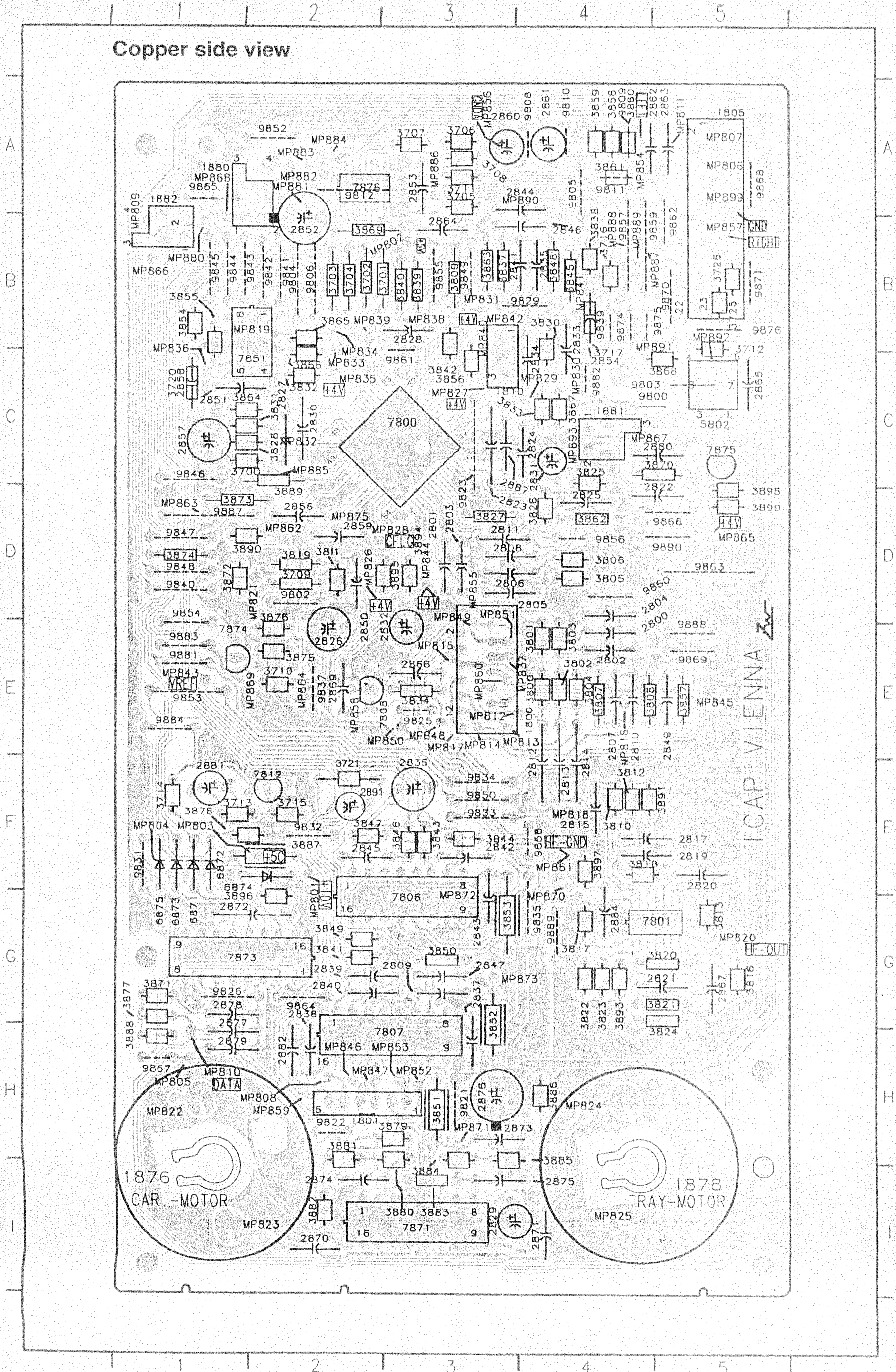
1850	C2
2890	C1
5801	C2
7810	B1

NOT ON ALL VERSIONS



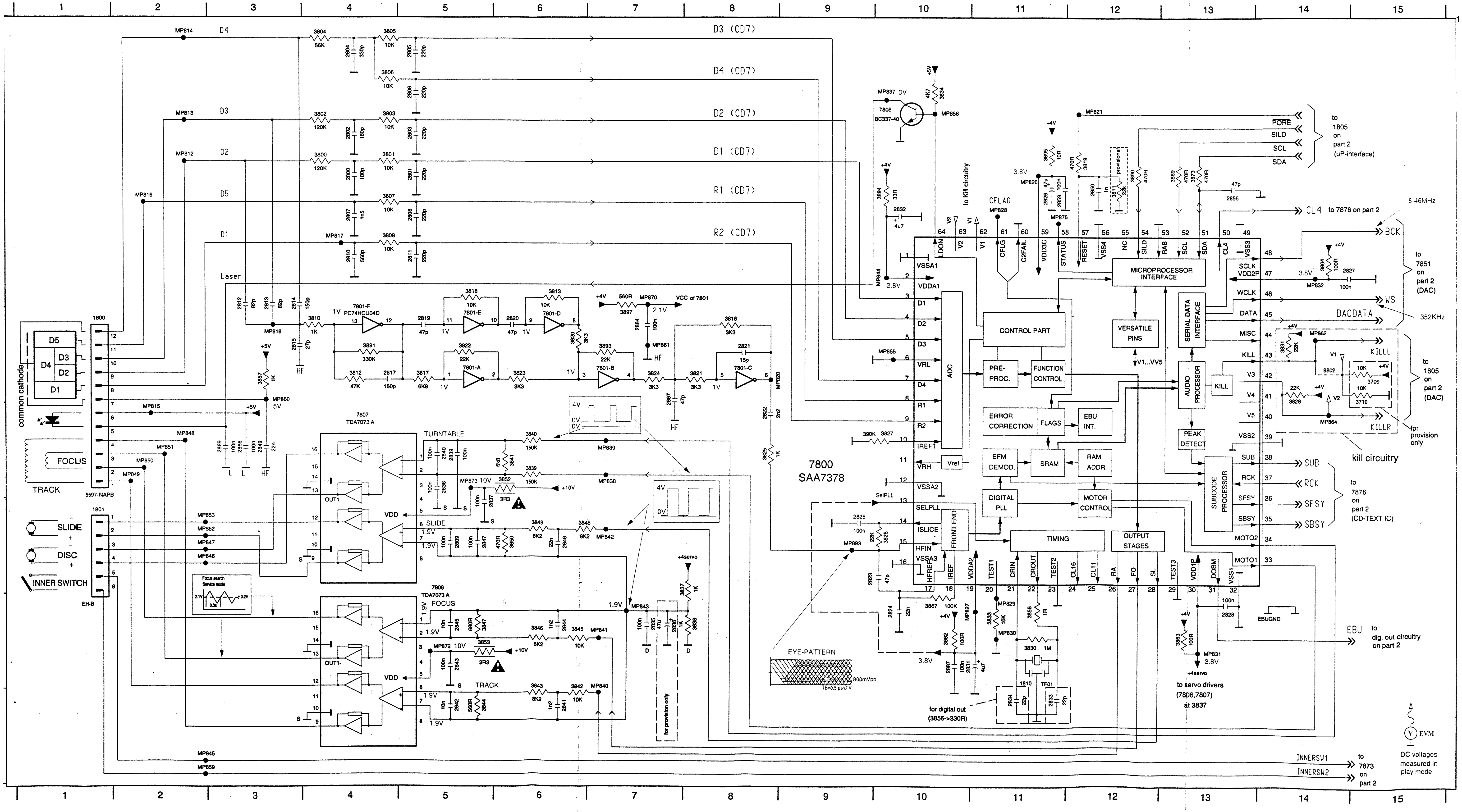
1800	E3
1801	H2
1805	B5
1810	C3
1876	I1
1878	I4
1880	B2
1881	C4
1882	B1
2800	D4
2801	D3
2802	E4
2803	D3
2804	D4
2805	D3
2806	D3
2807	E4
2808	D3
2809	G3
2810	E4
2811	D3
2812	F4
2813	F4
2814	F4
2815	F4
2817	F4
2819	F4
2820	F5
2821	G5
2822	D5
2823	C3
2824	C4
2825	D4
2826	D2
2827	C2
2828	B3
2829	I3
2830	C2
2831	C4
2832	E3
2833	B4
2834	C3
2835	B4
2836	F3
2837	H3
2838	H2
2839	G2
2840	G2
2841	B3
2842	F3
2843	G3
2844	B4
2845	F2
2846	B4
2847	G3
2849	E5
2850	D2
2851	C1
2852	A2
2853	A3
2854	B4
2856	D2
2857	C1
2858	C1
2859	D2
2860	A3
2861	A4
2862	A4
2863	A5
2864	B3
2865	C5
2866	E3
2867	G5
2869	E2
2870	I2
2871	I4
2872	G2
2873	H3
2874	I2
2875	I3
2876	H3
2877	G1
2878	G1
2879	H1
2880	C5
2881	F1
2882	H2
2884	G4
2887	C3
3700	C1
3701	B3
3702	B2
3703	B2
3704	B2
3705	A3
3706	A3
3707	A3
3708	A3
3709	D2
3710	E2
3711	A3
3712	B5
3713	F1
3714	F1
3715	F2
3716	B4
3717	B4
3720	C1
3725	B5
3726	B5
3800	E4
3801	E4
3802	E4
3803	E4
3804	E4
3805	D4
3806	D4
3807	E4
3808	E4
3809	B3
3810	F4
3811	D2
3812	F4
3813	G5
3816	G5
3817	G4
3818	F4
3819	D2
3820	G5
3821	G5
3822	G4
3823	G4
3824	G5
3825	C4
3826	D4
3827	D3
3828	C1
3830	B4
3831	C1
3832	C2
3833	C4
3834	E3
3837	B3
3838	B4
3839	B3
3840	B3
3841	G2
3842	B3
3843	F3
3844	F3
3845	B4
3846	F3
3847	F2
3848	B4
3849	G2
3850	G3
3851	H3
3852	G3
3853	G3
3854	B1
3855	B1
3856	C3
3857	E5
3858	A4
3859	A4
3860	A4
3861	A4
3862	D4
3863	B3
3864	C1
3865	B2
3866	C2
3867	C4
3868	B5
3869	B2
3870	C5
3871	G1
3872	D1
3873	D1
3874	D1
3875	E2
3876	E2
3877	G1
3878	F2
3879	H3
3880	H3
3881	H2
3882	I2
3883	I3
3884	H3
3885	H3
3886	H4
3887	F2
3888	H1
3889	C2
3890	D1
3891	F4
3893	G4
3894	D3
3895	D3
3896	G2
3897	F4
3898	D5
3899	D5
5802	C5
6871	F1
6872	F1
6873	F1
6874	F2
6875	F1
7800	C2
7801	G4
7806	G3
7807	H3
7808	E2
7812	F2
7851	B2
7871	I3
7873	G1
7874	E1
7875	C5
9800	C4
9802	D2
9803	C5
9804	B2
9805	A4
9806	B2
9808	A4
9809	A4
9810	A4
9811	A4
9812	A2
9821	H3
9822	H2
9823	C3
9825	E3
9826	G1
9829	B4
9831	F1
9832	F2
9833	F3
9834	F3
9835	G4
9837	E2
9839	B4
9840	D1
9841	B2
9842	B2
9843	B2
9844	B1
9845	B1
9846	C1
9847	D1
9848	D1
9849	B3
9850	F3
9852	A2
9853	E1
9854	D1
9855	B3
9856	D4
9857	B4
9858	F4
9859	B4
9860	D4
9861	B3
9862	B5
9863	D5
9864	G2
9865	A1
9866	D5
9867	H1
9868	A5
9869	E5
9870	B5
9871	B5
9874	B4
9875	B4
9876	B5
9881	E1
9882	C4
9883	E1
9884	E1
9887	D1
9888	E5
9889	G4
9890	D5

Copper side view



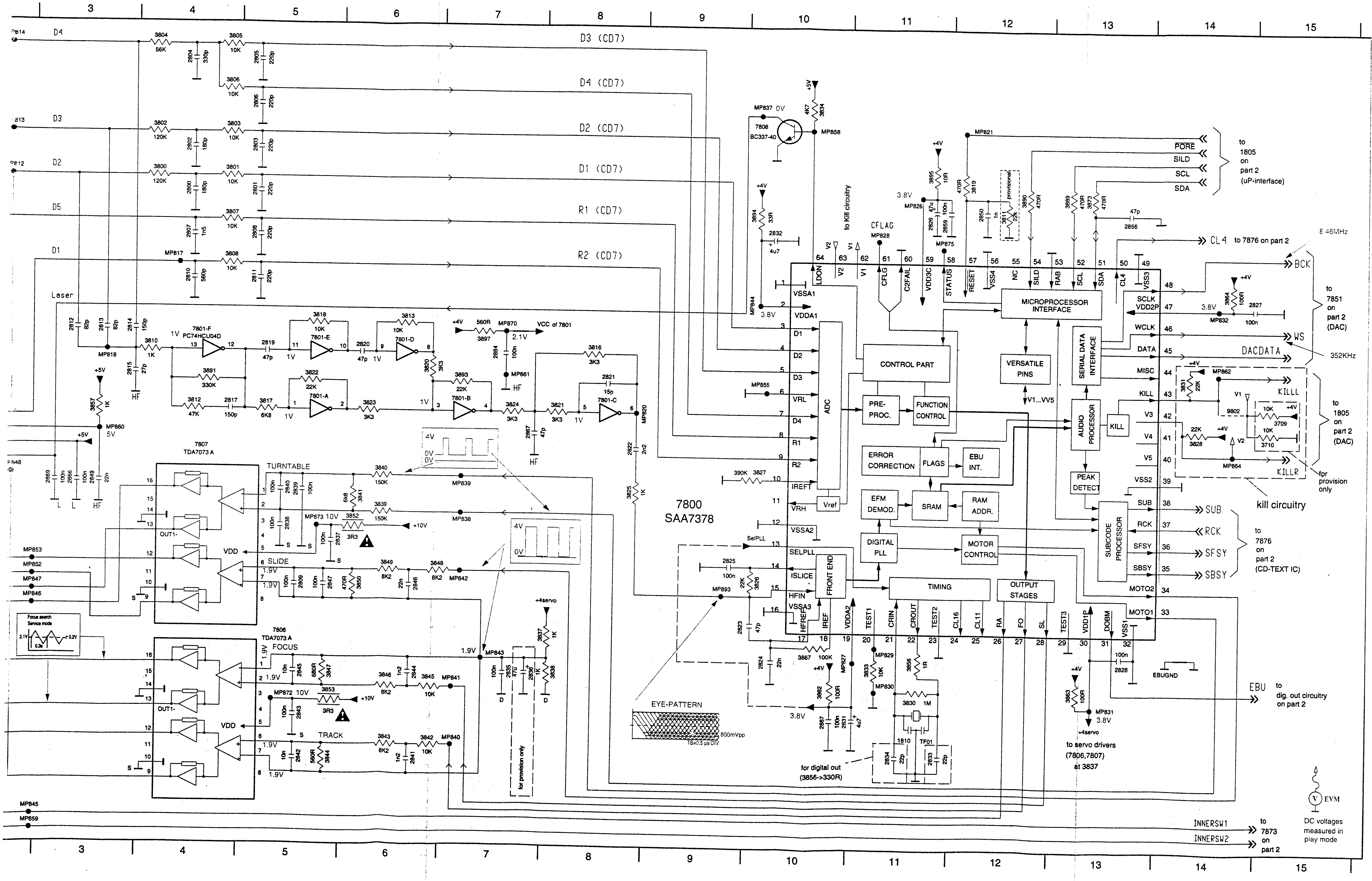
1800	E3	2869	E2	3841	G2	7874	E1
1801	H2	2870	I2	3842	B3	7875	C5
1805	B5	2871	I4	3843	F3	9800	C4
1810	C3	2872	G2	3844	F3	9802	D2
1876	I1	2873	H3	3845	B4	9803	C5
1878	I4	2874	I2	3846	F3	9804	B2
1880	B2	2875	I3	3847	F2	9805	A4
1881	C4	2876	H3	3848	B4	9806	B2
1882	B1	2877	G1	3849	G2	9808	A4
2800	D4	2878	G1	3850	G3	9809	A4
2801	D3	2879	H1	3851	H3	9810	A4
2802	E4	2880	C5	3852	G3	9811	A4
2803	D3	2881	F1	3853	G3	9812	A2
2804	D4	2882	H2	3854	B1	9821	H3
2805	D3	2884	G4	3855	B1	9822	H2
2806	D3	2887	C3	3856	C3	9823	C3
2807	E4	3700	C1	3857	E5	9825	E3
2808	D3	3701	B3	3858	A4	9826	G1
2809	G3	3702	B2	3859	A4	9829	B4
2810	E4	3703	B2	3860	A4	9831	F1
2811	D3	3704	B2	3861	A4	9832	F2
2812	F4	3705	A3	3862	D4	9833	F3
2813	F4	3706	A3	3863	B3	9834	F3
2814	F4	3707	A3	3864	C1	9835	G4
2815	F4	3708	A3	3865	B2	9837	E2
2817	F4	3709	D2	3866	C2	9839	B4
2819	F4	3710	E2	3867	C4	9840	D1
2820	F5	3711	A3	3868	B5	9841	B2
2821	G5	3712	B5	3869	B2	9842	B2
2822	D5	3713	F1	3870	C5	9843	B2
2823	C3	3714	F1	3871	G1	9844	B1
2824	C4	3715	F2	3872	D1	9845	B1
2825	D4	3716	B4	3873	D1	9846	C1
2826	D2	3717	B4	3874	D1	9847	D1
2827	C2	3720	C1	3875	E2	9848	D1
2828	B3	3725	B5	3876	E2	9849	B3
2829	I3	3726	B5	3877	G1	9850	F3
2830	C2	3800	E4	3878	F2	9852	A2
2831	C4	3801	E4	3879	H3	9853	E1
2832	E3	3802	E4	3880	H3	9854	D1
2833	B4	3803	E4	3881	H2	9855	B3
2834	C3	3804	E4	3882	I2	9856	D4
2835	B4	3805	D4	3883	I3	9857	B4
2836	F3	3806	D4	3884	H3	9858	F4
2837	H3	3807	E4	3885	H3	9859	B4
2838	H2	3808	E4	3886	H4	9860	D4
2839	G2	3809	B3	3887	F2	9861	B3
2840	G2	3810	F4	3888	H1	9862	B5
2841	B3	3811	D2	3889	C2	9863	D5
2842	F3	3812	F4	3890	D1	9864	G2
2843	G3	3813	G5	3891	F4	9865	A1
2844	B4	3816	G5	3893	G4	9866	D5
2845	F2	3817	G4	3894	D3	9867	H1
2846	B4	3818	F4	3895	D3	9868	A5
2847	G3	3819	D2	3896	G2	9869	E5
2849	E5	3820	G5	3897	F4	9870	B5
2850	D2	3821	G5	3898	D5	9871	B5
2851	C1	3822	G4	3899	D5	9874	B4
2852	A2	3823	G4	5802	C5	9875	B4
2853	A3	3824	G5	6871	F1	9876	B5
2854	B4	3825	C4	6872	F1	9881	E1
2856	D2	3826	D4	6873	F1	9882	C4
2857	C1	3827	D3	6874	F2	9883	E1
2858	C1	3828	C1	6875	F1	9884	E1
2859	D2	3830	B4	7800	C2	9887	D1
2860	A3	3831	C1	7801	G4	9888	E5
2861	A4	3832	C2	7806	G3	9889	G4
2862	A4	3833	C4	7807	H3	9890	D5
2863	A5	3834	E3	7808	E2		
2864	B3	3837	B3	7812	F2		
2865	C5	3838	B4	7851	B2		
2866	E3	3839	B3	7871	I3		
2867	G5	3840	B3	7873	G1		

rcuit Diagram Main Board part1



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
D3 (CD7)
D4 (CD7)
D2 (CD7)
D1 (CD7)
R1 (CD7)
R2 (CD7)
Laser
common cathode
D5
D4
D3
D2
D1
FOCUS
TRACK
SLIDE
DISC
INNER SWITCH
1800
5597-NAPB
1801
EH-B
7807
TDA7073 A
7806
TDA7073 A
TURNTABLE
SLIDE
FOCUS
TRACK
OUT1-
VDD
7801-F
PC74HCU04D
7801-E
7801-D
7801-A
7801-B
7801-C
VCC of 7801
7808
BC337-40
to Kill circuitry
CFLAG
7800
SAA7378
ADC
CONTROL PART
PRE-PROC.
FUNCTION CONTROL
ERROR CORRECTION
FLAGS
EBU INT.
EFM DEMOD.
SRAM
RAM ADDR.
DIGITAL PLL
MOTOR CONTROL
FRONT END
TIMING
OUTPUT STAGES
MICROPROCESSOR INTERFACE
VERSATILE PINS
V1...VV5
SERIAL DATA INTERFACE
AUDIO PROCESSOR
KILL
PEAK DETECT
SUBCODE PROCESSOR
Vref
PORE
SILD
SCL
SDA
to 1805 on part 2 (uP-interface)
CL4 to 7876 on part 2
8.46MHz
BCK
WS
DACDATA
352KHz
to 7851 on part 2 (DAC)
KILLL
KILLR
to 1805 on part 2 (DAC)
for provision only
kill circuitry
SUB
RCK
SFSY
SBSY
to 7876 on part 2 (CD-TEXT IC)
EBU
to dig. out circuitry on part 2
EBUGND
to servo drivers (7806,7807) at 3837
EYE-PATTERN
800mVpp
TB=0.5 µs DIV
for digital out (3856->330R)
for provision only
Focus search Service mode
INNERSW1
INNERSW2
to 7873 on part 2
EVM
DC voltages measured in play mode

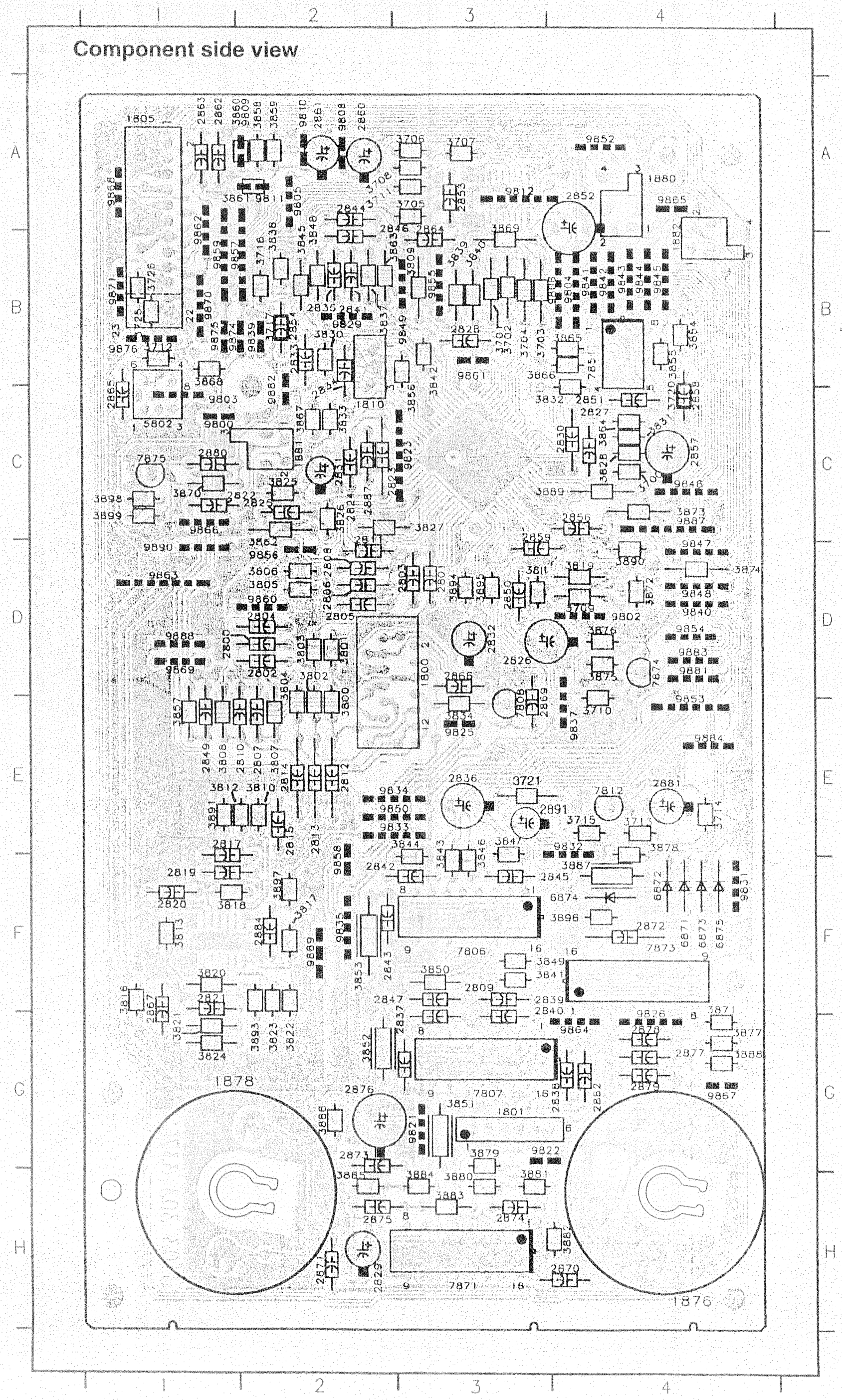
1800	D1
1801	F1
1810	G1
2800	B4
2801	B5
2802	B4
2803	B5
2804	A4
2805	A5
2806	A5
2807	C4
2808	C5
2809	F5
2810	C4
2811	C5
2812	C3
2813	C3
2814	C3
2815	D3
2817	D4
2819	D5
2820	D6
2821	D8
2822	E8
2823	F9
2824	G9
2825	F9
2826	B1
2827	C1
2828	G1
2831	G1
2832	B1
2833	H1
2834	H1
2835	G7
2836	G7
2837	F5
2838	E5
2839	E5
2840	E5
2841	H6
2842	H5
2843	G5
2844	G6
2845	G5
2846	F6
2847	F5
2849	E3
2850	B1
2856	B1
2859	B1
2866	E3
2867	D7
2869	E3
2884	D7
2887	G1
3709	D1
3710	D1
3800	B4
3801	B4
3802	A4
3803	A4
3804	A4
3805	A4
3806	A4
3807	B4
3808	C4
3810	D4
3811	B1



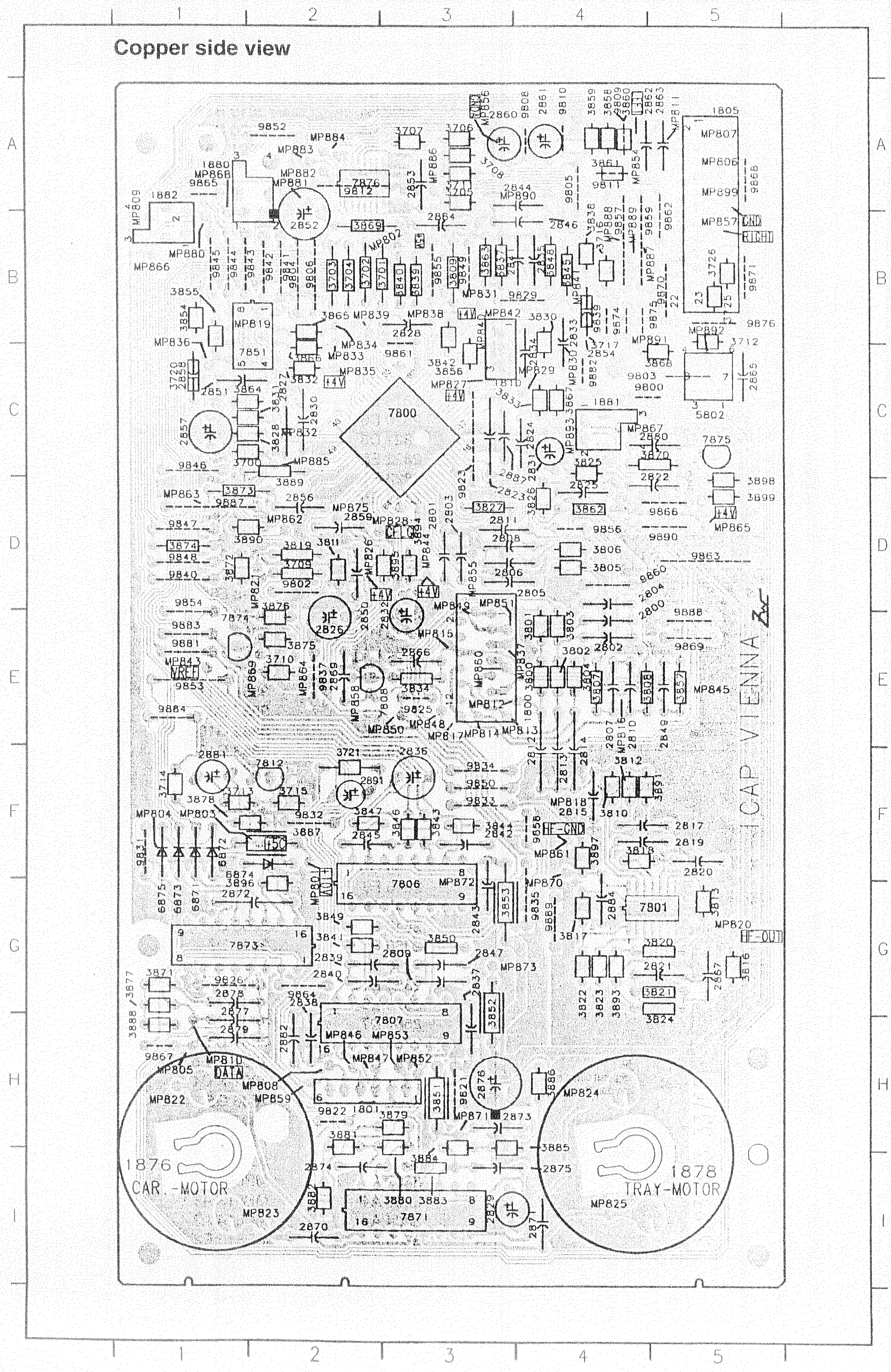
3
4
5
6
7
8
9
10
11
12
13
14
15
D4
D3
D2
D5
D1
Laser
D3 (CD7)
D4 (CD7)
D2 (CD7)
D1 (CD7)
R1 (CD7)
R2 (CD7)
3804 56K
3805 10K
3806 10K
3802 120K
3803 10K
3800 120K
3801 10K
3807 10K
3808 10K
MP817
MP818
MP860 5V
7801-F PC74HCU04D
7801-E
7801-D
7801-A
7801-B
7801-C
VCC of 7801
MP870
MP861
MP820
HF
7807 TDA7073 A
7806 TDA7073 A
TURNTABLE
SLIDE
FOCUS
TRACK
OUT1-
VDD
MP853
MP852
MP847
MP846
MP845
MP859
MP839
MP838
MP842
MP841
MP840
MP843
MP872 10V
MP873 10V
Focus search Service mode
for provision only
+4servo
EYE-PATTERN
800mVpp
TB=0.5 µs/DIV
7800 SAA7378
MP837 0V
7806 BC337-40
MP858
to Kill circuitry
CFLAG
MP828
MP826
MP875
MP821
provisional
PORE
SILD
SCL
SDA
to 1805 on part 2 (uP-interface)
CL4 to 7876 on part 2
8.46MHz
BCK
WS
DACDATA
352KHz
to 7851 on part 2 (DAC)
KILLL
KILLR
to 1805 on part 2 (DAC)
for provision only
kill circuitry
SUB
RCK
SFSY
SBSY
to 7876 on part 2 (CD-TEXT IC)
EBU
to dig. out circuitry on part 2
EBUGND
MP831 3.8V
to servo drivers (7806,7807) at 3837
for digital out (3856->330R)
1810
TF01
VSSA1
VDDA1
VRL
IREFT
VRH
VSSA2
SELPLL
ISLICE
HFIN
VSSA3
HFREF
IREF
VDDA2
TEST1
CRIN
CROUT
TEST2
CL16
CL11
RA
FO
SL
TEST3
VDD1P
DOBM
VSS1
MOTO1
MOTO2
SBSY
SFSY
RCK
SUB
VSS2
V5
V4
V3
KILL
MISC
DATA
WCLK
VDD2P
SCLK
VSS3
CL4
SDA
SCL
RAB
SILD
NC
VSS4
RESET
STATUS
VDD3C
C2FAIL
CFLG
V1
V2
LDON
ADC
Vref
CONTROL PART
PRE-PROC.
FUNCTION CONTROL
ERROR CORRECTION
FLAGS
EBU INT.
EFM DEMOD.
SRAM
RAM ADDR.
DIGITAL PLL
MOTOR CONTROL
FRONT END
TIMING
OUTPUT STAGES
MICROPROCESSOR INTERFACE
VERSATILE PINS
V1...V5
SERIAL DATA INTERFACE
AUDIO PROCESSOR
KILL
PEAK DETECT
SUBCODE PROCESSOR
INNERSW1
INNERSW2
to 7873 on part 2
EVM
DC voltages measured in play mode

1800	D1
1801	F1
1810	G11
2800	B4
2801	B5
2802	B4
2803	B5
2804	A4
2805	A5
2806	A5
2807	C4
2808	C5
2809	F5
2810	C4
2811	C5
2812	C3
2813	C3
2814	C3
2815	D3
2817	D4
2819	D5
2820	D6
2821	D8
2822	E8
2823	F9
2824	G9
2825	F9
2826	B11
2827	C14
2828	G13
2831	G10
2832	B10
2833	H11
2834	H11
2835	G7
2836	G7
2837	F5
2838	E5
2839	E5
2840	E5
2841	H6
2842	H5
2843	G5
2844	G6
2845	G5
2846	F6
2847	F5
2849	E3
2850	B12
2856	B13
2859	B11
2866	E3
2867	D7
2869	E3
2884	D7
2887	G10
3709	D15
3710	D15
3800	B4
3801	B4
3802	A4
3803	A4
3804	A4
3805	A4
3806	A4
3807	B4
3808	C4
3810	D4
3811	B12
3812	D4
3813	C6
3816	D8
3817	D5
3818	C5
3819	B12
3820	D6
3821	D8
3822	D5
3823	D6
3824	D7
3825	E8
3826	F10
3827	E10
3828	D14
3830	G11
3831	D14
3833	G11
3834	B10
3837	F8
3838	G8
3839	E6
3840	E6
3841	E6
3842	G6
3843	G6
3844	H5
3845	G6
3846	G6
3847	G5
3848	F6
3849	F6
3850	F6
3852	E6
3853	G5
3856	G11
3857	D3
3862	G10
3863	G13
3864	C14
3867	G10
3873	B13
3889	B13
3890	B12
3891	D4
3893	D7
3894	B10
3895	B11
3897	D7
7800	E9
7801-A	D5
7801-B	D7
7801-C	D8
7801-D	D6
7801-E	D5
7801-F	D4
7806	G5
7807	E4
7808	B10
9802	D14
MP812	B2
MP813	A2
MP814	A2
MP815	E2
MP816	B2
MP817	C4
MP818	D3
MP820	D8
MP821	B12
MP826	B11
MP827	G10
MP828	B11
MP829	G11
MP830	G11
MP831	G13
MP832	C14
MP837	B10
MP838	E6
MP839	E6
MP840	G7
MP841	G7
MP842	F7
MP843	G7
MP844	C10
MP845	H3
MP846	F2
MP847	F2
MP848	E2
MP849	E2
MP850	E2
MP851	E2
MP852	F2
MP853	F2
MP855	D10
MP858	B10
MP859	H3
MP860	D3
MP861	D7
MP862	D14
MP864	E14
MP870	C7
MP872	G5
MP873	E5
MP875	C11
MP893	F9

Component side view



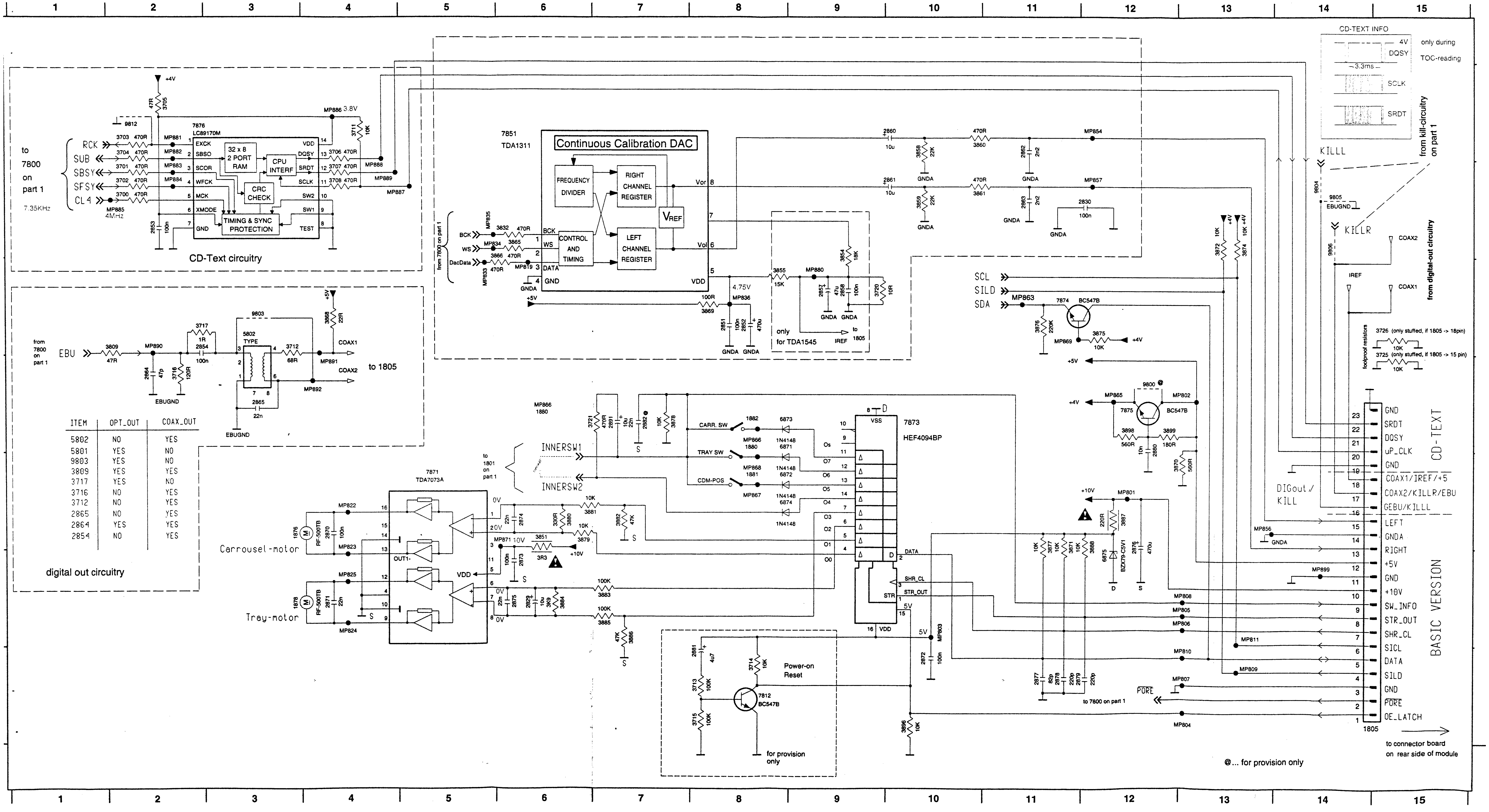
1800	D3	2869	E3	3841	F3	9800	C1
1801	G3	2870	H4	3842	B3	9802	D4
1805	A1	2871	H2	3843	F3	9803	C1
1810	B2	2872	F4	3844	F3	9804	B4
1876	H4	2873	G2	3845	B2	9805	A2
1878	H1	2874	H3	3846	F3	9806	B4
1880	B4	2875	H2	3847	E3	9808	A2
1881	C2	2876	G3	3848	B2	9809	A2
1882	B4	2877	G4	3849	F3	9810	A2
2800	D2	2878	G4	3850	F3	9811	A2
2801	D3	2879	G4	3851	G3	9812	A3
2802	D2	2880	C1	3852	G2	9821	G3
2803	D3	2881	E4	3853	F2	9822	G3
2804	D2	2882	G4	3854	B4	9823	C3
2805	D2	2884	F2	3855	B4	9825	E3
2806	D2	2887	C2	3856	B3	9826	G4
2807	E2	3700	C4	3857	E1	9829	B2
2808	D2	3701	B3	3858	A2	9831	F4
2809	F3	3702	B3	3859	A2	9832	E4
2810	E2	3703	B3	3860	A2	9833	E2
2811	D2	3704	B3	3861	A2	9834	E2
2812	E2	3705	A3	3862	C2	9835	F2
2813	E2	3706	A3	3863	B2	9837	E4
2814	E2	3707	A3	3864	C4	9839	B2
2815	E2	3708	A3	3865	B4	9840	D4
2817	F1	3709	D4	3866	B4	9841	B4
2819	F1	3710	E4	3867	C2	9842	B4
2820	F1	3711	A3	3868	B1	9843	B4
2821	G1	3712	B1	3869	B3	9844	B4
2822	C1	3713	E4	3870	C1	9845	B4
2823	C2	3714	E4	3871	G4	9846	C4
2824	C2	3715	E4	3872	D4	9847	D4
2825	C2	3716	B2	3873	C4	9848	D4
2826	D3	3717	B2	3874	D4	9849	B3
2827	C4	3720	C4	3875	D4	9850	E2
2828	B3	3725	B1	3876	D4	9852	A4
2829	H2	3726	B1	3877	G4	9853	E4
2830	C4	3800	E2	3878	E4	9854	D4
2831	C2	3801	D2	3879	G3	9855	B3
2832	D3	3802	E2	3880	H3	9856	D2
2833	B2	3803	D2	3881	H3	9857	B2
2834	B2	3804	E2	3882	H4	9858	F2
2835	B2	3805	D2	3883	H3	9859	B1
2836	E3	3806	D2	3884	H3	9860	D2
2837	G2	3807	E2	3885	H2	9861	B3
2838	G4	3808	E1	3886	G2	9862	A1
2839	F3	3809	B3	3887	F4	9863	D1
2840	F3	3810	E2	3888	G4	9864	G4
2841	B2	3811	D3	3889	C4	9865	A4
2842	F3	3812	E2	3890	D4	9866	C1
2843	F2	3813	F1	3891	E1	9867	G4
2844	B2	3816	F1	3893	F2	9868	A1
2845	F3	3817	F2	3894	D3	9869	D1
2846	B2	3818	F1	3895	D3	9870	B1
2847	F3	3819	D4	3896	F4	9871	B1
2849	E1	3820	F1	3897	F2	9874	B2
2850	D3	3821	G1	3898	C1	9875	B1
2851	C4	3822	F2	3899	C1	9876	B1
2852	A4	3823	F2	5802	C1	9881	D4
2853	A3	3824	G1	6871	F4	9882	C2
2854	B2	3825	C2	6872	F4	9883	D4
2856	C4	3826	C2	6873	F4	9884	E4
2857	C4	3827	C2	6874	F4	9887	C4
2858	C4	3828	C4	6875	F4	9888	D1
2859	C3	3830	B2	7806	F3	9889	F2
2860	A2	3831	C4	7807	G3	9890	D1
2861	A2	3832	C4	7808	E3		
2862	A1	3833	C2	7812	E4		
2863	A1	3834	E3	7851	B4		
2864	B3	3837	B2	7871	H3		
2865	C1	3838	B2	7873	F4		
2866	E3	3839	B3	7874	D4		
2867	F1	3840	B3	7875	C1		



Copper side view

1800	E3
1801	H2
1805	B5
1810	C3
1876	I1
1878	I4
1880	B2
1881	C4
1882	B1
2800	D4
2801	D3
2802	E4
2803	D3
2804	D4
2805	D3
2806	D3
2807	E4
2808	D3
2809	G3
2810	E4
2811	D3
2812	F4
2813	F4
2814	F4
2815	F4
2817	F4
2819	F4
2820	F5
2821	G5
2822	D5
2823	C3
2824	C4
2825	D4
2826	D2
2827	C2
2828	B3
2829	I3
2830	C2
2831	C4
2832	E3
2833	B4
2834	C3
2835	B4
2836	F3
2837	H3
2838	H2
2839	G2
2840	G2
2841	B3
2842	F3
2843	G3
2844	B4
2845	F2
2846	B4
2847	G3
2849	E5
2850	D2
2851	C1
2852	A2
2853	A3
2854	B4
2856	D2
2857	C1
2858	C1
2859	D2
2860	A3
2861	A4
2862	A4
2863	A5
2864	B3
2865	C5
2866	E3
2867	G5
2869	E2
2870	I2
2871	I4
2872	G2
2873	H3
2874	I2
2875	I3
2876	H3
2877	G1
2878	G1
2879	H1
2880	C5
2881	F1
2882	H2
2884	G4
2887	C3
3700	C1
3701	B3
3702	B2
3703	B2
3704	B2
3705	A3
3706	A3
3707	A3
3708	A3
3709	D2
3710	E2
3711	A3
3712	B5
3713	F1
3714	F1
3715	F2
3716	B4
3717	B4
3720	C1
3725	B5
3726	B5
3800	E4
3801	E4
3802	E4
3803	E4
3804	E4
3805	D4
3806	D4
3807	E4
3808	E4
3809	B3
3810	F4
3811	D2
3812	F4
3813	G5
3816	G5
3817	G4
3818	F4
3819	D2
3820	G5
3821	G5
3822	G4
3823	G4
3824	G5
3825	C4
3826	D4
3827	D3
3828	C1
3830	B4
3831	C1
3832	C2
3833	C4
3834	E3
3837	B3
3838	B4
3839	B3
3840	B3
3841	G2
3842	B3
3843	F3
3844	F3
3845	B4
3846	F3
3847	F2
3848	B4
3849	G2
3850	G3
3851	H3
3852	G3
3853	G3
3854	B1
3855	B1
3856	C3
3857	E5
3858	A4
3859	A4
3860	A4
3861	A4
3862	D4
3863	B3
3864	C1
3865	B2
3866	C2
3867	C4
3868	B5
3869	B2
3870	C5
3871	G1
3872	D1
3873	D1
3874	D1
3875	E2
3876	E2
3877	G1
3878	F2
3879	H3
3880	H3
3881	H2
3882	I2
3883	I3
3884	H3
3885	H3
3886	H4
3887	F2
3888	H1
3889	C2
3890	D1
3891	F4
3893	G4
3894	D3
3895	D3
3896	G2
3897	F4
3898	D5
3899	D5
5802	C5
6871	F1
6872	F1
6873	F1
6874	F2
6875	F1
7800	C2
7801	G4
7806	G3
7807	H3
7808	E2
7812	F2
7851	B2
7871	I3
7873	G1
7874	E1
7875	C5
9800	C4
9802	D2
9803	C5
9804	B2
9805	A4
9806	B2
9808	A4
9809	A4
9810	A4
9811	A4
9812	A2
9821	H3
9822	H2
9823	C3
9825	E3
9826	G1
9829	B4
9831	F1
9832	F2
9833	F3
9834	F3
9835	G4
9837	E2
9839	B4
9840	D1
9841	B2
9842	B2
9843	B2
9844	B1
9845	B1
9846	C1
9847	D1
9848	D1
9849	B3
9850	F3
9852	A2
9853	E1
9854	D1
9855	B3
9856	D4
9857	B4
9858	F4
9859	B4
9860	D4
9861	B3
9862	B5
9863	D5
9864	G2
9865	A1
9866	D5
9867	H1
9868	A5
9869	E5
9870	B5
9871	B5
9874	B4
9875	B4
9876	B5
9881	E1
9882	C4
9883	E1
9884	E1
9887	D1
9888	E5
9889	G4
9890	D5

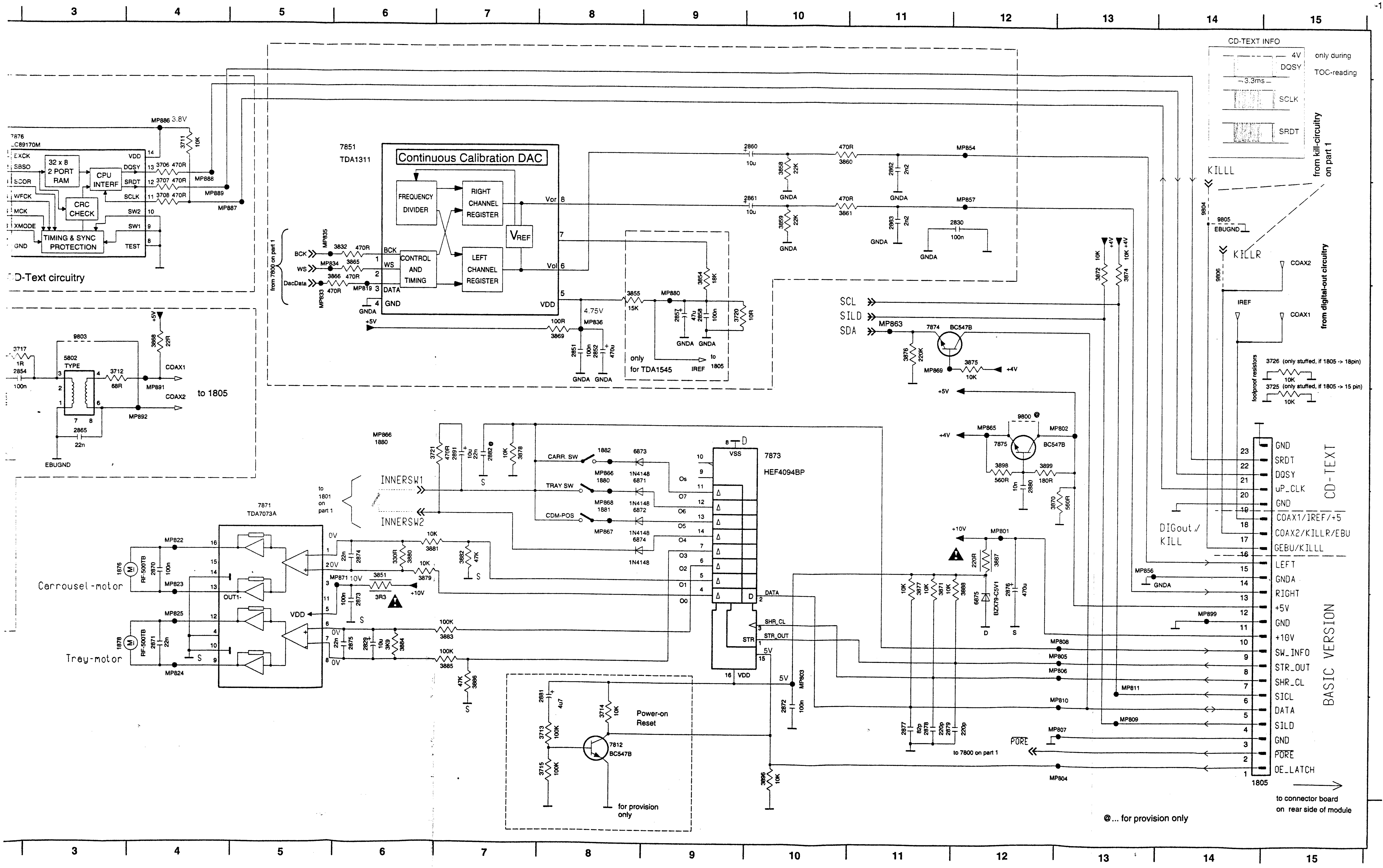
rcuit Diagram Main Board part2


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
to 7800 on part 1
7.35KHz
RCK
SUB
SBSY
SFSY
CL4
MP885 4MHz
9812
+4V
47R 3705
7876 LC89170M
EXCK
SBSO
SCOR
WFCK
MCK
XMODE
GND
32 x 8 2 PORT RAM
CPU INTERF
CRC CHECK
TIMING & SYNC PROTECTION
VDD
DQSY
SRDT
SCLK
SW2
SW1
TEST
MP886 3.8V
3711 10K
MP888
MP889
MP887
2853 100n
CD-Text circuitry
7851 TDA1311
Continuous Calibration DAC
FREQUENCY DIVIDER
RIGHT CHANNEL REGISTER
LEFT CHANNEL REGISTER
CONTROL AND TIMING
VREF
BCK
WS
DATA
GND
VDD
Vor
Vol
from 7800 on part 1
DacData
GNDA
+5V
4.75V
MP836
100R 3869
2851 100n 2852 470u
3855 15K
MP880
3854 18K
3720 10R
only for TDA1545
IREF
to 1805
2860 10u
3858 22K
470R 3860
2862 2n2
MP854
2861 10u
3859 22K
470R 3861
2863 2n2
MP857
2830 100n
GNDA
CD-TEXT INFO
4V
DQSY
3.3ms
SCLK
SRDT
only during TOC-reading
from kill-circuitry on part 1
KILLL
KILLR
9804
9805 EBUGND
9806
COAX2
COAX1
IREF
from digital-out circuitry
3872 10K
3874 10K
+4V
SCL
SILD
SDA
MP863
7874 BC547B
3876 220K
MP869
3875 10K
looproof resistors
3726 (only stuffed, if 1805 -> 18pin) 10K
3725 (only stuffed, if 1805 -> 15 pin) 10K
from 7800 on part 1
EBU
3809 47R
MP890
3717 1R
2854 100n
9803
5802 TYPE
3712 68R
MP891
MP892
COAX1
COAX2
to 1805
3868 22R
+5V
2864 47p
3716 120R
EBUGND
2865 22n
digital out circuitry
MP866 1880
3721 470R
2881 10u 22n
2882 @
10K 3878
CARR. SW
TRAY SW
CDM-POS
1882
1880
1881
MP866
MP868
MP867
6873
6871
6872
6874
1N4148
7873 HEF4094BP
VSS
VDD
STR
DATA
SHR_CL
STR_OUT
5V
to 1801 on part 1
INNERSW1
INNERSW2
7871 TDA7073A
MP822
MP823
MP825
MP824
1876
1878
RF-500TB
2870 100n
2871 22n
Carrousel-motor
Tray-motor
OUT1-
VDD
0V
20V
10V
MP871
3851 3R3
+10V
10K 3881
10K 3879
320R 3880
3882 47K
100K 3883
100K 3885
47K 3886
2874
2873
2875
2829
10u 3K9 3884
+5V
+4V
MP865
MP802
9800 @
7875 BC547B
3898 560R
3899 180R
2880 10n
3870 560R
+10V
MP801
220R 3887
6875 BZX79-C5V1
2876 470u
10K 3877
3871 10K
10K 3888
MP856
GNDA
MP899
MP808
MP805
MP806
MP811
MP810
MP809
MP807
MP804
MP803
2872 100n
2877 82p
2878 220p
2879 220p
PORE
to 7800 on part 1
2881 4u7
3713 100K
3714 10K
Power-on Reset
7812 BC547B
3715 100K
for provision only
3896 10K
DIGout / KILL
CD-TEXT
BASIC VERSION
GND
SRDT
DQSY
uP_CLK
GND
COAX1/IREF/+5
COAX2/KILLR/EBU
GEBU/KILLL
LEFT
GNDA
RIGHT
+5V
GND
+10V
SW_INFO
STR_OUT
SHR_CL
SICL
DATA
SILD
GND
PORE
OE_LATCH
1805
to connector board on rear side of module
@... for provision only

ITEM	OPT_OUT	COAX_OUT
5802	NO	YES
5801	YES	NO
9803	YES	NO
3809	YES	YES
3717	YES	NO
3716	NO	YES
3712	NO	YES
2865	NO	YES
2864	YES	YES
2854	NO	YES

1805	G1
1876	E3
1878	F3
1880	D8
1881	E8
1882	D8
2829	F6
2830	B1
2851	C8
2852	C8
2853	B2
2854	C2
2857	C9
2858	C9
2860	A1
2861	B1
2862	A1
2863	B1
2864	D2
2865	D3
2870	E4
2871	F4
2872	G1
2873	F6
2874	E6
2875	F6
2876	E1
2877	G1
2878	G1
2879	G1
2880	D1
2881	G8
2882	D7
3700	B2
3701	B2
3702	B2
3703	A2
3704	A2
3705	A2
3706	A4
3707	B4
3708	B4
3711	A4
3712	C3
3713	G8
3714	G8
3715	G8
3716	D2
3717	C2
3720	C9
3725	D1
3726	C1
3809	C2
3832	B6
3851	E6
3854	B9
3855	C8
3858	A1
3859	B1
3860	A1
3861	B1
3865	B6
3866	C6
3868	C4
3869	C8
3870	E1
3871	E1
3872	B1
3874	B1

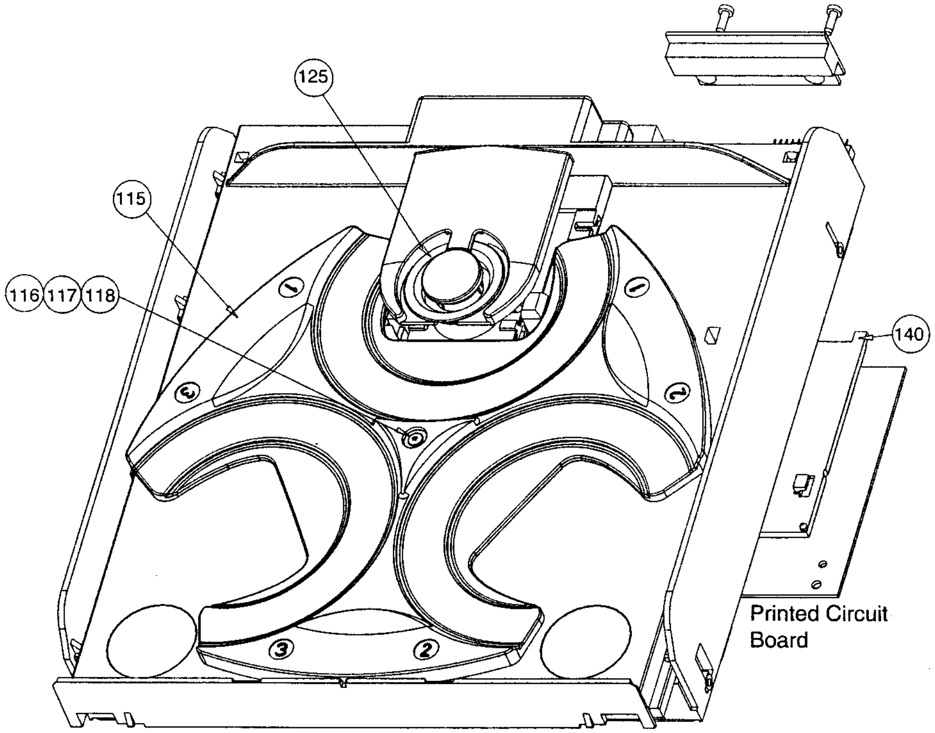
rt2


3
4
5
6
7
8
9
10
11
12
13
14
15
7876
C89170M
EXCK
SBSO
SCOR
WFCK
MCK
XMODE
GND
32 x 8
2 PORT
RAM
CPU
INTERF
CRC
CHECK
TIMING & SYNC
PROTECTION
VDD
DQSY
SRDT
SCLK
SW2
SW1
TEST
MP886 3.8V
3711 10K
3706 470R
3707 470R
3708 470R
MP888
MP889
MP887
D-Text circuitry
7851
TDA1311
Continuous Calibration DAC
FREQUENCY
DIVIDER
RIGHT
CHANNEL
REGISTER
LEFT
CHANNEL
REGISTER
CONTROL
AND
TIMING
VREF
BCK
WS
DATA
GND
Vor
Vol
VDD
DacData
from 7800 on part 1
3832 470R
3865 470R
3866 470R
MP835
MP834
MP833
MP819
GNDA
+5V
100R
3869
4.75V
MP836
2851 100n
2852 470u
3855 15K
MP880
2857 47u
2858 100n
3854 18K
3720 10R
only
for TDA1545
IREF
to 1805
2860 10u
3858 22K
470R 3860
2862 2n2
MP854
2861 10u
3859 22K
470R 3861
2863 2n2
MP857
2830 100n
GNDA
CD-TEXT INFO
4V
DQSY
only during
TOC-reading
3.3ms
SCLK
SRDT
from kill-circuitry on part 1
KILLL
9804
9805
EBUGND
KILLR
9806
COAX2
IREF
COAX1
from digital-out circuitry
3872 10K
3874 10K
+4V
SCL
SILD
SDA
MP863
7874 BC547B
3876 220K
MP869
3875 10K
+4V
+5V
3726 (only stuffed, if 1805 -> 18pin)
10K
3725 (only stuffed, if 1805 -> 15 pin)
10K
foolproof resistors
+5V
3868 22R
9803
3717 1R
2854 100n
5802 TYPE
3712 68R
COAX1
MP891
COAX2
to 1805
2865 22n
MP892
EBUGND
MP866 1880
3721 470R
2891
2882 22n
3878 10K
CARR. SW
1882
6873
MP866 1880
TRAY SW
1N4148 6871
MP868 1881
CDM-POS
1N4148 6872
MP867
1N4148 6874
1N4148
to 1801 on part 1
INNERSW1
INNERSW2
7873
HEF4094BP
VSS
VDD
DATA
SHR_CL
STR_OUT
STR
5V
9800 @
MP865
MP802
7875
BC547B
+4V
3898 560R
3899 180R
2880 1n
3870 560R
7871
TDA7073A
MP822
1876
RF-500TB
2870 100n
Carrousel-motor
MP823
MP825
1878
RF-500TB
2871 22n
Trey-motor
MP824
OUT1-
VDD
0V
20V
10K 3881
2874 22n
3880 330R
3882 47K
10K 3879
MP871 10V
3851 3R3
+10V
2873 100n
100K 3883
2875 22n
2829 10u
3884 3K9
100K 3885
3886 47K
2881 4u7
3714 10K
Power-on
Reset
3713 100K
7812 BC547B
3715 100K
for provision only
+10V
MP801
3887 220R
6875 BZX79-C5V1
2876 470u
3877 10K
3871 10K
3888 10K
MP803 5V
2872 100n
3896 10K
2877 82p
2878 220p
2879 220p
to 7800 on part 1
MP856
GNDA
MP899
MP808
MP805
MP806
MP811
MP810
MP809
MP807
PORE
MP804
DIGout / KILL
GND
SRDT
DQSY
uP_CLK
GND
COAX1/IREF/+5
COAX2/KILLR/EBU
GEBU/KILLL
LEFT
GNDA
RIGHT
+5V
GND
+10V
SW_INFO
STR_OUT
SHR_CL
SICL
DATA
SILD
GND
PORE
OE_LATCH
CD-TEXT
BASIC VERSION
1805
to connector board
on rear side of module
@... for provision only

-13

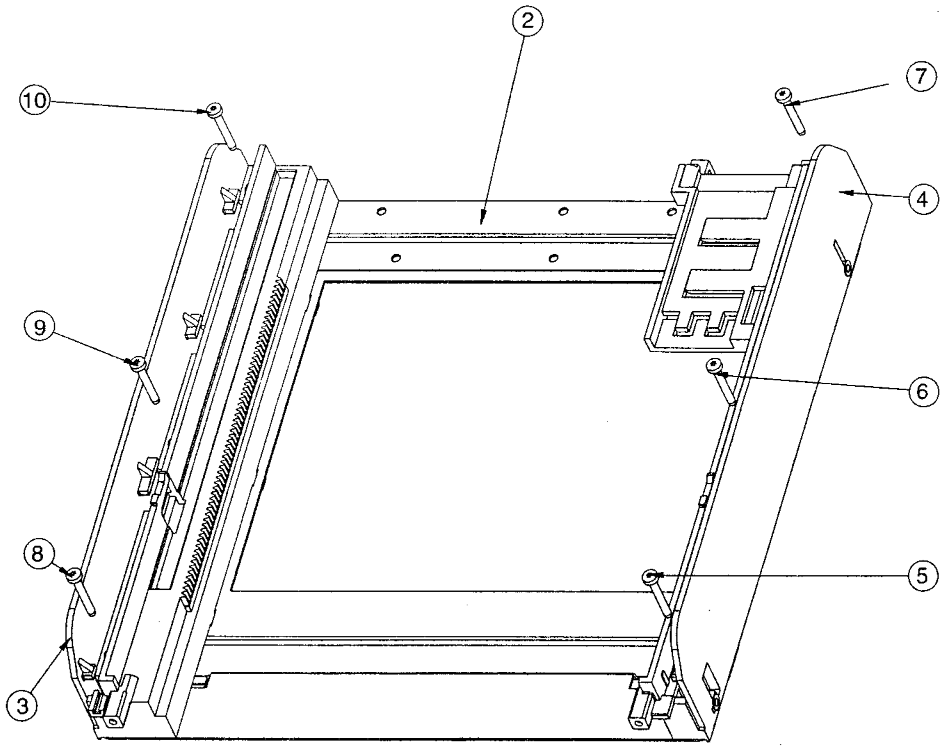
1805	G14
1876	E3
1878	F3
1880	D8
1881	E8
1882	D8
2829	F6
2830	B12
2851	C8
2852	C8
2853	B2
2854	C2
2857	C9
2858	C9
2860	A10
2861	B10
2862	A11
2863	B11
2864	D2
2865	D3
2870	E4
2871	F4
2872	G10
2873	F6
2874	E6
2875	F6
2876	E12
2877	G11
2878	G11
2879	G11
2880	D12
2881	G8
2882	D7
3700	B2
3701	B2
3702	B2
3703	A2
3704	A2
3705	A2
3706	A4
3707	B4
3708	B4
3711	A4
3712	C3
3713	G8
3714	G8
3715	G8
3716	D2
3717	C2
3720	C9
3725	D15
3726	C15
3809	C2
3832	B6
3851	E6
3854	B9
3855	C8
3858	A10
3859	B10
3860	A10
3861	B10
3865	B6
3866	C6
3868	C4
3869	C8
3870	E12
3871	E11
3872	B13
3874	B13
3875	C12
3876	C11
3877	E11
3878	D7
3879	E6
3880	E6
3881	E6
3882	E7
3883	F7
3884	F6
3885	F7
3886	F7
3887	E12
3888	E12
3896	G10
3898	D12
3899	D12
5802	C3
6871	D8
6872	E8
6873	D8
6874	E8
6875	F12
7812	G8
7851	A6
7871	E5
7873	D10
7874	C11
7875	D12
7876	A2
9800	D12
9803	C3
9804	B14
9805	B14
9806	B14
9808	A10
9809	A10
9810	B10
9811	B10
9812	A2
MP801	E12
MP802	D13
MP803	F10
MP804	G13
MP805	F13
MP806	F13
MP807	G13
MP808	F13
MP809	G13
MP810	G13
MP811	F13
MP819	C6
MP822	E4
MP823	E4
MP824	F4
MP825	F4
MP833	C5
MP834	B5
MP835	B5
MP836	C8
MP854	A12
MP856	E13
MP857	B12
MP863	C11
MP865	D12
MP866	D8
MP867	E8
MP868	E8
MP869	C11
MP871	E6
MP880	C9
MP881	A2
MP882	A2
MP883	B2
MP884	B2
MP885	B2
MP886	A4
MP887	B4
MP888	B4
MP889	B4
MP890	C2
MP891	D4
MP892	D4
MP899	F14

CS 53 06



MECHANICAL PARTSLIST 3CDC MODULE

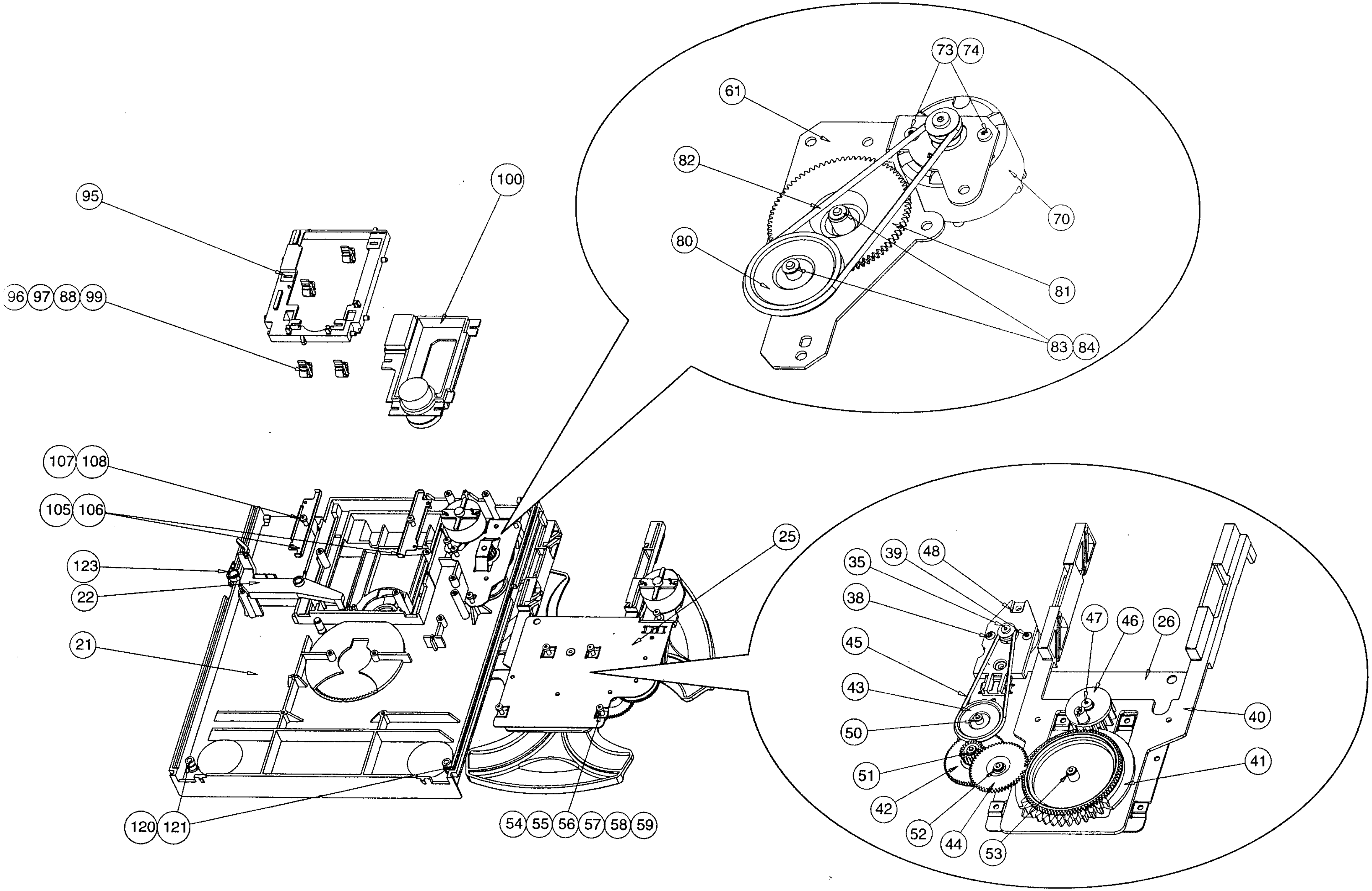
	4822 390 10136	POLYLUB GLY801 (GREASE)	43	4822 528 10937	PULLEY
3	4822 463 11008	GUIDE LEFT	44	4822 522 10493	IDLER WHEEL
4	4822 463 11009	GUIDE RIGHT	45	4822 358 10115	BELT
21	4822 441 11615	DRAWER	46	4822 466 10735	ECCENTRIC GEAR WHEEL
22	4822 402 10088	BRACKET TUMBLER	50	4822 532 12364	WASHER
38	4822 502 12548	SCREW M2,6X3,5	51	4822 532 12364	WASHER
39	4822 502 12548	SCREW M2,6X3,5	52	4822 532 12364	WASHER
40	4822 463 11011	SLIDE	53	4822 532 12364	WASHER
41	4822 522 10509	CONTROL DISC	35	4822 361 10753	CARROUSEL MOTOR
42	4822 522 10492	GEAR WHEEL	70	4822 361 10753	CARROUSEL MOTOR



MECHANICAL PARTSLIST 3CDC MODULE

73	4822 502 12548	SCREW M2,6X3,5	98	4822 325 50215	SUSPENSION
74	4822 502 12548	SCREW M2,6X3,5	99	4822 325 50215	SUSPENSION
80	4822 528 10937	PULLEY	100	4822 691 10615	CD DRIVE VAM1201
81	4822 522 10494	GEAR DRAWER	115	4822 466 10736	CARROUSEL
82	4822 358 10115	BELT	117	4822 532 12365	BUSH DRAWER
83	4822 532 12364	WASHER	120	4822 532 51756	GROMMET
84	4822 532 12364	WASHER	121	4822 532 51756	GROMMET
95	4822 404 10894	SUPPORT	123	4822 402 10085	SWITCH BRACKET
96	4822 325 50215	SUSPENSION	125	4822 401 11708	DISC CLAMP
97	4822 325 50215	SUSPENSION	140	4822 466 10734	PLATE

EXPLODED VIEW (3CDC MODULE)


73
74
61
82
70
80
81
83
84
100
95
96
97
88
99
107
108
105
106
123
22
21
25
35
39
48
38
47
46
26
45
43
40
50
51
41
42
52
44
53
120
121
54
55
56
57
58
59

POWER 2VA BOARD

TABLE OF CONTENTS

Circuit Diagram 11-2
Component Layout 11-3
Electrical parts list 11-4

Remarks :

ELECTRICAL PARTSLIST 3CDC MODULE

MISCELLANEOUS

1800	4822 267 51453	Flex Foil connector 12pin
1805	4822 265 10979	Flex Foil connector 15pin
1805	4822 265 11182	Flex Foil connector 23pin
1805	4822 265 11184	Flex Foil connector 18pin
1806	4822 265 10981	Flex Foil connector 15pin
1806	4822 267 10757	Flex Foil connector 23pin top entry
1806	4822 265 11185	Flex Foil connector 18pin top entry
1860	4822 265 11183	Flex Foil connector 4pin side entry
1880	4822 276 13503	Switch
1881	4822 276 13503	Switch
1882	4822 276 13503	Switch
8002	4822 320 11974	Flex Foil 15pin length= 190mm
8002	4822 320 12229	Flex Foil 18pin length= 190mm
8002	4822 320 12231	Flex Foil 23pin length= 190mm
8002	4822 320 12232	Flex Foil 15pin length= 480mm

CAPACITORS

2800	4822 126 10053	180pF	10%	50V
2801	4822 122 10466	220pF	10%	50V
2802	4822 126 10053	180pF	10%	50V
2803	4822 122 10466	220pF	10%	50V
2804	4822 126 12787	330pF	10%	50V
2805	4822 122 10466	220pF	10%	50V
2806	4822 122 10466	220pF	10%	50V
2807	4822 126 12878	1,5nF	10%	16V
2808	4822 122 10466	220pF	10%	50V
2809	4822 126 12882	100nF	20%	50V
2810	4822 122 10459	560pF	10%	50V
2811	4822 122 10466	220pF	10%	50V
2812	4822 122 10319	82pF	5%	50V
2813	4822 122 10319	82pF	5%	50V
2814	4822 122 33849	150pF	10%	50V
2815	4822 122 33192	27pF	5%	50V
2817	4822 122 33849	150pF	10%	50V
2819	4822 122 33848	47pF	5%	50V
2820	4822 122 33848	47pF	5%	50V
2821	4822 122 10462	15pF	5%	50V
2822	4822 126 12339	2,2nF	10%	16V
2823	4822 122 33848	47pF	5%	50V
2824	4822 126 11585	22nF	20%	50V
2825	4822 126 12882	100nF	20%	50V
2826	4822 124 23624	470µF	20%	16V
2827	4822 126 12882	100nF	20%	50V
2828	4822 126 12882	100nF	20%	50V
2829	4822 124 41579	10µF	20%	50V
2830	4822 126 12882	100nF	20%	50V
2831	4822 124 12032	4,7µF	20%	50V
2832	4822 124 12032	4,7µF	20%	50V
2833	4822 122 33191	22pF	5%	50V
2834	4822 122 33191	22pF	5%	50V
2835	4822 126 12882	100nF	20%	50V
2837	4822 126 12882	100nF	20%	50V
2838	4822 126 12882	100nF	20%	50V
2839	4822 126 12882	100nF	20%	50V
2840	4822 126 12882	100nF	20%	50V
2841	4822 122 10574	1,2nF	10%	16V
2842	4822 121 51387	10nF	20%	16V
2843	4822 126 12882	100nF	20%	50V
2844	4822 122 10574	1,2nF	10%	16V
2845	4822 121 51387	10nF	20%	16V
2846	4822 126 11585	22nF	20%	50V
2847	4822 126 12882	100nF	20%	50V

CAPACITORS

2849	4822 126 11585	22nF	20%	50V
2850	4822 122 33197	1nF	10%	50V
2851	4822 126 12882	100nF	20%	50V
2852	4822 124 80857	470µF	20%	16V
2853	4822 126 12882	100nF	20%	50V
2856	4822 122 33848	47pF	5%	50V
2859	4822 126 12882	100nF	20%	50V
2860	4822 124 41579	10µF	20%	50V
2861	4822 124 41579	10µF	20%	50V
2862	4822 126 12339	2,2nF	10%	16V
2863	4822 126 12339	2,2nF	10%	16V
2864	4822 122 33848	47pF	5%	50V
2866	4822 126 12882	100nF	20%	50V
2867	4822 122 33848	47pF	5%	50V
2868	4822 126 12882	100nF	20%	50V
2869	4822 126 12882	100nF	20%	50V
2870	4822 126 12882	100nF	20%	50V
2871	4822 126 11585	22nF	20%	50V
2872	4822 126 12882	100nF	20%	50V
2873	4822 126 12882	100nF	20%	50V
2874	4822 126 11585	22nF	20%	50V
2875	4822 126 11585	22nF	20%	50V
2876	4822 124 80857	470µF	20%	16V
2877	4822 122 10319	82pF	5%	50V
2878	4822 122 10466	220pF	10%	50V
2879	4822 122 10466	220pF	10%	50V
2880	4822 121 51387	10nF	20%	16V
2884	4822 126 12882	100nF	20%	50V
2887	4822 126 12882	100nF	20%	50V
2890	4822 124 23624	470µF	20%	16V
2891	4822 124 12125	10µF	20%	16V

RESISTORS

3700	4822 116 83883	470Ω	5%	0,16W
3701	4822 116 83883	470Ω	5%	0,16W
3702	4822 116 83883	470Ω	5%	0,16W
3703	4822 116 83883	470Ω	5%	0,16W
3704	4822 116 83883	470Ω	5%	0,16W
3705	4822 116 52195	47Ω	5%	0,5W
3706	4822 116 83883	470Ω	5%	0,16W
3707	4822 116 83883	470Ω	5%	0,16W
3708	4822 116 83883	470Ω	5%	0,16W
3710	4822 116 83864	10kΩ	5%	0,5W
3711	4822 116 83864	10kΩ	5%	0,5W
3717	4822 116 80176	1Ω	5%	0,5W
3720	4822 116 52176	10Ω	5%	0,5W
3721	4822 116 83883	470Ω	5%	0,16W
3725	4822 116 83864	10kΩ	5%	0,5W
3726	4822 116 83864	10kΩ	5%	0,5W
3800	4822 116 52239	120kΩ	5%	0,5W
3801	4822 116 83864	10kΩ	5%	0,5W
3802	4822 116 52239	120kΩ	5%	0,5W
3803	4822 116 83864	10kΩ	5%	0,5W
3804	4822 116 52291	56kΩ	5%	0,5W
3805	4822 116 83864	10kΩ	5%	0,5W
3806	4822 116 83864	10kΩ	5%	0,5W
3807	4822 116 83864	10kΩ	5%	0,5W
3808	4822 116 83864	10kΩ	5%	0,5W
3809	4822 116 52175	100Ω	5%	0,5W
3810	4822 050 11002	1kΩ	5%	0,2W
3812	4822 116 83884	47kΩ	5%	0,16W
3813	4822 116 83864	10kΩ	5%	0,5W
3816	4822 116 52269	3,3kΩ	5%	0,5W

ELECTRICAL PARTSLIST 3CDC MODULE

RESISTORS

3817	4822 116 83961	6,8kΩ	5%	0,16W
3818	4822 116 83864	10kΩ	5%	0,5W
3819	4822 116 83883	470Ω	5%	0,16W
3820	4822 116 52269	3,3kΩ	5%	0,5W
3821	4822 116 52269	3,3kΩ	5%	0,5W
3822	4822 116 52257	22kΩ	5%	0,5W
3823	4822 116 52269	3,3kΩ	5%	0,5W
3824	4822 116 52269	3,3kΩ	5%	0,5W
3825	4822 050 11002	1kΩ	5%	0,2W
3826	4822 116 52257	22kΩ	5%	0,5W
3827	4822 116 52278	390kΩ	5%	0,5W
3828	4822 116 52257	22kΩ	5%	0,5W
3830	4822 116 52235	1MΩ	5%	0,5W
3831	4822 116 52257	22kΩ	5%	0,5W
3832	4822 116 83883	470Ω	5%	0,16W
3833	4822 116 83864	10kΩ	5%	0,5W
3834	4822 116 52283	4,7kΩ	5%	0,5W
3837	4822 050 11002	1kΩ	5%	0,2W
3838	4822 050 11002	1kΩ	5%	0,2W
3839	4822 116 52245	150kΩ	5%	0,16W
3840	4822 116 52245	150kΩ	5%	0,16W
3841	4822 116 83961	6,8kΩ	5%	0,16W
3842	4822 116 83864	10kΩ	5%	0,5W
3843	4822 116 52303	8,2kΩ	5%	0,5W
3844	4822 116 52226	560Ω	5%	0,5W
3844	4822 116 83883	470Ω	5%	0,16W
3845	4822 116 83864	10kΩ	5%	0,5W
3846	4822 116 52303	8,2kΩ	5%	0,5W
3847	4822 116 52228	680Ω	5%	0,5W
3847	4822 116 83883	470Ω	5%	0,16W
3848	4822 116 52303	8,2kΩ	5%	0,5W
3849	4822 116 52303	8,2kΩ	5%	0,5W
3850	4822 116 83883	470Ω	5%	0,16W
3851	4822 052 10338	3,3Ω		NFR25
3852	4822 052 10338	3,3Ω		NFR25
3853	4822 052 10338	3,3Ω		NFR25
3856	4822 116 52219	330Ω	5%	0,5W
3856	4822 116 80176	1Ω	5%	0,5W
3857	4822 050 11002	1kΩ	5%	0,2W
3858	4822 116 52257	22kΩ	5%	0,5W
3859	4822 116 52257	22kΩ	5%	0,5W
3860	4822 116 83883	470Ω	5%	0,16W
3861	4822 116 83883	470Ω	5%	0,16W
3862	4822 116 52175	100Ω	5%	0,5W
3863	4822 116 52175	100Ω	5%	0,5W
3864	4822 116 52175	100Ω	5%	0,5W
3865	4822 116 83883	470Ω	5%	0,16W
3866	4822 116 83883	470Ω	5%	0,16W
3867	4822 116 52234	100kΩ	5%	0,5W
3868	4822 116 52191	33Ω	5%	0,5W
3869	4822 116 52175	100Ω	5%	0,5W
3870	4822 116 52226	560Ω	5%	0,5W
3871	4822 116 83864	10kΩ	5%	0,5W
3872	4822 116 83864	10kΩ	5%	0,5W
3873	4822 116 83883	470Ω	5%	0,16W
3874	4822 116 83864	10kΩ	5%	0,5W
3875	4822 116 83864	10kΩ	5%	0,5W
3876	4822 116 83874	220kΩ	5%	0,5W
3877	4822 116 83864	10kΩ	5%	0,5W
3878	4822 116 83864	10kΩ	5%	0,5W

RESISTORS

3879	4822 116 83864	10kΩ	5%	0,5W
3880	4822 116 52219	330Ω	5%	0,5W
3881	4822 116 83864	10kΩ	5%	0,5W
3882	4822 116 83884	47kΩ	5%	0,16W
3883	4822 116 52234	100kΩ	5%	0,5W
3884	4822 116 52276	3,9kΩ	5%	0,5W
3885	4822 116 52234	100kΩ	5%	0,5W
3886	4822 116 83884	47kΩ	5%	0,16W
3887	4822 052 10221	220Ω	5%	
3888	4822 116 83864	10kΩ	5%	0,5W
3889	4822 116 83883	470Ω	5%	0,16W
3890	4822 116 83883	470Ω	5%	0,16W
3891	4822 116 52272	330kΩ	5%	0,5W
3893	4822 116 52257	22kΩ	5%	0,5W
3894	4822 116 52191	33Ω	5%	0,5W
3895	4822 116 52176	10Ω	5%	0,5W
3896	4822 116 83864	10kΩ	5%	0,5W
3897	4822 116 52226	560Ω	5%	0,5W
3898	4822 116 52226	560Ω	5%	0,5W
3899	4822 116 52213	180Ω	5%	0,5W

COILS

1810	4822 242 10849	CRYSTAL 8MHz
1810	4822 242 73557	CERAMIC RES. 8,46MHz
5801	4822 157 71249	4,7µH

DIODES

6871	4822 130 30621	1N4148
6872	4822 130 30621	1N4148
6873	4822 130 30621	1N4148
6874	4822 130 30621	1N4148
6875	4822 130 34233	BZX79-B5V1

TRANSISTORS

7808	4822 130 41344	BC337-40
7874	4822 130 40959	BC547B
7875	4822 130 40959	BC547B

INTEGRATED CIRCUITS

7800©	4822 209 12752	SAA7378GP (Signal Processor CD7)
7801©	5322 209 11517	PC74HCU04T (HF Amplifier)
7806	4822 209 32852	TDA7073A/N2 (Servo Driver)
7807	4822 209 32852	TDA7073A/N2 (Motor Driver)
7810	4822 130 10845	OPTICAL OUT UNIT
7851	4822 209 32421	TDA1311A/N2(DAC)
7871	4822 209 32852	TDA7073A/N2 (Motor Driver)
7873	5322 209 10421	HEF4094BP (Shift Register)
7876	4822 209 16143	LC89170M (CD Text)

AF5 BOARD

TABLE OF CONTENTS

Brief Introduction of the AF5 Board 12-1
Component and Chip layouts 12-2
Circuit Diagram 12-3
Electrical parts list.. 12-4

BRIEF INTRODUCTION OF THE AF5 BOARD

The AF5 Board consists of the following features :

a. SOFAC IC

SOFAC IC TEA6321 (7553) which includes functions such as source selection, loudness control, dynamic bass control, treble control, front/rear volume control and muting function. Sound features such as DBB, DSC and IS are controllable via I^2C data from the microprocessor.

The SOFAC IC caters for 4 input sources, namely tuner, tape, CD and AUX. It also has a MONO input which is tied to ground via 100n. In our application , software will switch the input source to MONO input during STANDBY mode and some other occasions where noise from other input sources is undesirable.

Note that the input to the SOFAC IC must be ac coupled to prevent 'plop' noise. Input networks are included to provide appropriate attenuation for various sources.

b. KARAOKE MIC. MIXING

Karaoke Mic. Mixing can be configured to cater for one of the following :
NK : Non Karaoke.
SK : Simple Karaoke which caters for mic. mixing with additional mic. amplifier board.
FK : Full Karaoke with vocal fader and echo effect with additional karaoke board.

c. DOLBY PRO LOGIC (DPL) INTERFACE

DPL Interface can be configured to cater for DPL and also DPL with one of the karaoke functions.

d. LINE OUT

Line Out with JST XH connector for connection to LINE OUT cinch socket.

e. SUB-WOOFER OUTPUT

Sub-Woofer Output with cinch socket for connection to active sub-woofer speaker.

f. INCREDIBLE SURROUND

Incredible Surround effect using transistor circuit BC847C (7517, 7518, 7519, 7520) to create phase shifting and spatial effect.

g. HEADPHONE AMPLIFIER

Headphone Amplifier using Op-Amp. NJM4556AM (7501).

h. CD STANDBY SWITCH

CD Standby control circuit using transistors BC327-25 (7515) and BC847C (7516) which switches on the supply to CD servo control IC , HF circuit and the laser light pen in CD mode only.

i. HEADPHONE SENSING CIRCUIT

Headphone Sensing circuit to mute centre and surround channels in DPL application.

j. ATTENUATION NETWORK

Attenuation network is provided at the output of the AF5 Board for interfacing with the power board of different output power.

ELECTRICAL PARTS LIST - POWER 2VA (18W) BOARD

MISCELLANEOUS

1201	4822 265 31015	⚠	Mains Socket
1202	4822 272 10269	⚠	Voltage Selector
1205	4822 071 52002	⚠	Fuse T2A 250V
1206	4822 071 55002	⚠	Fuse T5A 250V
1211	4822 071 51002	⚠	Fuse T1A 250V
1212	4822 071 51002	⚠	Fuse T1A 250v
1290	4822 265 10967		Speaker Terminal

CAPACITORS

2220	5322 121 42386	100nF 5% 63V
2221	5322 121 42386	100nF 5% 63V
2222	5322 121 42386	100nF 5% 63V
2224	4822 124 11516	6800µF 20% 35V
2239	4822 122 33519	470pF 10% 50V
2240	5322 121 42386	100nF 5% 63V
2241	4822 122 33197	1nF 10% 50V
2242	4822 124 22263	220µF 20% 25V
2243	4822 124 42057	3300µF 20% 25V
2245	4822 124 40433	47µF 20% 25V
2246	4822 122 33197	1nF 10% 50V
2247	4822 122 33197	1nF 10% 50V
2248	4822 124 81029	100µF 20% 25V
2249	4822 124 40433	47µF 20% 25V
2250	4822 124 41584	100µF 20% 10V
2251	4822 126 12785	47nF 50V
2252	4822 122 33197	1nF 10% 50V
2253	4822 122 33197	1nF 10% 50V
2261	4822 126 12882	100nF +80/-20% 50V
2262	4822 124 23172	470µF 20% 50V
2263	4822 124 81151	22µF 50V
2264	4822 124 81136	100µF 25V
2265	4822 121 51387	10nF 20% 16V
2266	4822 121 51387	10nF 20% 16V
2267	4822 122 33197	1nF 10% 50V
2271	4822 121 51387	10nF 20% 16V
2272	4822 121 51387	10nF 20% 16V
2273	4822 124 40433	47µF 20% 25V
2274	4822 124 40433	47µF 20% 25V
2281	4822 122 10577	3,3nF 10% 16V
2282	4822 122 10577	3,3nF 10% 16V
2283	4822 124 22263	220µF 20% 25V
2284	4822 124 22263	220µF 20% 25V
2285	5322 121 42386	100nF 5% 63V
2286	5322 121 42386	100nF 5% 63V
2287	4822 123 14025	2200µF 20% 16V
2288	4822 123 14025	2200µF 20% 16V
2289	4822 126 12785	47nF 50V
2290	4822 126 12785	47nF 50V
2291	4822 124 40242	1µF 20% 63V
2293	4822 123 14026	470µF 20% 35V
2295	4822 122 33519	470pF 10% 50V
2297	4822 122 33848	47pF 5% 50V
2298	4822 122 33848	47pF 5% 50V
2299	4822 122 33519	470pF 10% 50V

RESISTORS

3204	4822 052 10108	⚠	1R 5% 0,33W
3211	4822 050 11002		1k 1% 0,4W
3212	4822 050 11002		1k 1% 0,4W
3214	4822 116 52256		2k2 5% 0,5W
3215	4822 116 52256		2k2 5% 0,5W
3216	4822 116 52256		2k2 5% 0,5W
3217	4822 116 52256		2k2 5% 0,5W
3241	4822 116 83961		6k8 5%
3242	4822 050 11002		1k 1% 0,4W
3243	4822 050 11002		1k 1% 0,4W
3244	4822 050 11002		1k 1% 0,4W
3245	4822 116 52283		4k7 5% 0,5W
3246	4822 116 52283		4k7 5% 0,5W
3247	4822 116 52283		4k7 5% 0,5W
3248	4822 116 52228		680R 5% 0,5W
3249	4822 116 52264		27k 5% 0,5W
3250	4822 116 52257		22k 5% 0,5W
3251	4822 116 52283		4k7 5% 0,5W
3252	4822 116 52283		4k7 5% 0,5W
3255	4822 116 52263		2k7 5% 0,5W
3256	4822 116 52283		4k7 5% 0,5W
3258	4822 116 52207		1k2 5% 0,5W
3260	4822 116 83882		39k 5% 0,5W
3261	4822 116 52276		3k9 5% 0,5W
3262	4822 052 10479	⚠	47R 5% 0,33W
3263	4822 116 83864		10k 5% 0,5W
3264	4822 116 52257		22k 5% 0,5W
3265	4822 052 10479	⚠	47R 5% 0,33W
3266	4822 052 10479	⚠	47R 5% 0,33W
3267	4822 052 10278	⚠	2R7 5% 0,33W
3268	4822 116 52243		1k5 5% 0,5W
3269	4822 116 52243		1k5 5% 0,5W
3270	4822 116 52243		1k5 5% 0,5W
3271	4822 116 83884		47k 5% 0,5W
3272	4822 116 83884		47k 5% 0,5W
3276	4822 116 83884		47k 5% 0,5W
3277	4822 116 52283		4k7 5% 0,5W
3281	4822 116 52263		2k7 5% 0,5W
3282	4822 116 52263		2k7 5% 0,5W
3283	4822 116 52249		1k8 5% 0,5W
3284	4822 116 52249		1k8 5% 0,5W
3287	4822 116 52263		2k7 5% 0,5W
3288	4822 116 52263		2k7 5% 0,5W
3289	4822 116 83881		390R 5% 0,5W
3290	4822 116 83881		390R 5% 0,5W
3293	4822 052 10228	⚠	2R2 5% 0,33W
3294	4822 052 10228	⚠	2R2 5% 0,33W
3295	4822 116 52256		2k2 5% 0,5W
3296	4822 116 52256		2k2 5% 0,5W
3297	4822 117 12148	⚠	1R5 5% 0,33W
3298	4822 117 12148	⚠	1R5 5% 0,33W
3299	4822 052 10479	⚠	47R 5% 0,33W

COILS & FILTERS

5202	4822 157 71285	⚠	Choke Coil 400µH 30%

DIODES

6220	4822 130 82079	D3SBA20
6241	5322 130 80686	1N5392
6242	5322 130 80686	1N5392
6243	4822 130 30621	1N4148
6244	4822 130 34173	BZX79-B5V6
6245	4822 130 30621	1N4148
6247	4822 130 30621	1N4148
6248	4822 130 34167	BZX79-B6V2
6251	4822 130 30621	1N4148
6252	4822 130 30621	1N4148
6253	4822 130 34382	BZX79-B8V2
6261	4822 130 31878	1N4003G
6262	4822 130 31024	BZX79-B18
6263	4822 130 34281	BZX79-B15
6265	4822 130 34174	BZX79-B4V7
6271	4822 130 30621	1N4148
6272	4822 130 34174	BZX79-B4V7
6273	4822 130 30621	1N4148

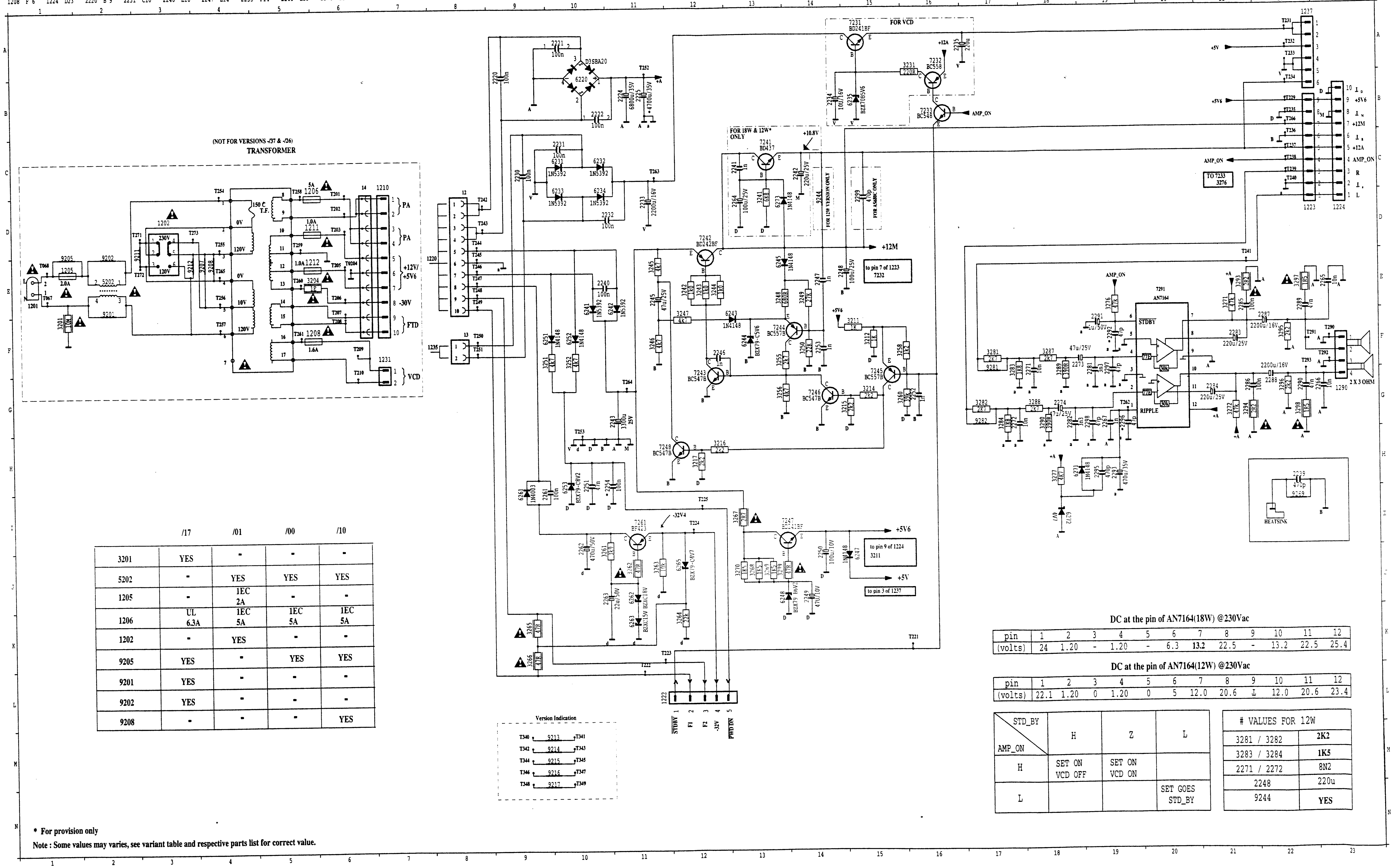
TRANSISTORS & INTEGRATED CIRCUITS

7241	4822 130 40982	BD437
7242	4822 130 63575	BD242BFI
7243	4822 130 40959	BC547B
7244	4822 130 44568	BC557B
7245	4822 130 44568	BC557B
7246	4822 130 40959	BC547B
7247	4822 130 63615	BD241BFI
7248	4822 130 40959	BC547B
7261	4822 130 41646	BF423
7291	4822 209 90411	AN7164

Note : Only the parts mentioned in this list are normal Service spare parts.

POWER 2VA CIRCUIT DIAGRAM

12	C 8
1201	E 1
1202	D 3
1205	E 1
1206	C 6
1208	F 6
1210	C 7
1211	D 6
1212	E 6
1222	L11
1223	D22
1224	D23
1231	F 7
1237	A22
1290	G23
13	F 8
14	C 6
2220	B 9
2221	A10
2222	B10
2224	B11
2225	B11
2230	C 9
2231	C10
2232	D11
2233	D11
2234	B14
2235	A16
2239	H22
2240	E10
2241	C13
2242	C14
2243	G11
2245	E11
2246	F12
2247	E14
2248	E14
2249	J14
2250	J14
2251	H10
2252	G16
2253	F14
2254	H10
2261	I 9
2262	I10
2263	J10
2264	D13
2265	E23
2266	G23
2267	G19
2271	G18
2272	G17
2273	F18
2274	G18
2281	G19
2282	G18
2283	F21
2284	G21
2285	E21
2286	G21
2287	F22
2288	G22
2289	E22
2290	G22
2291	F19
2292	F19
2293	H19
2295	H19
2296	G19
2297	G19
2298	G19
2299	D14
3201	F 1
3204	E 6
3211	F15
3212	F15
3214	G15
3215	G15
3216	H12
3217	H12
3231	A16
3241	D13
3242	E12
3243	E12
3244	E12
3245	E11
3246	F11
3247	F12
3248	E13
3249	E14
3250	F14
3251	F 9
3252	F10
3255	F13
3256	G13
3258	F15
3260	G15
3261	J10
3262	J11
3263	J11
3264	K12
3265	K 9
3266	K 9
3267	I13
3268	J13
3269	J13
3270	J13
3271	E21
3272	G21
3276	E19
3277	H18
3281	F17
3282	G17
3283	G17
3284	G17
3287	F18
3288	G18
3289	G18
3290	G18
3293	E21
3294	G21
3295	F22
3296	G22
3297	E22
3298	G22
3299	J13
5202	E 2
6220	A10
6231	C10
6232	C10
6233	C10
6234	C10
6235	B15
6241	E10
6242	E11
6243	F13
6244	F13
6245	E13
6247	J15
6248	J13
6251	F 9
6252	F10
6253	H10
6261	I 9
6262	J11
6263	K11
6265	J12
6271	H18
6272	I18
6273	D13
7231	A15
7232	A16
7233	B16
7241	C13
7242	D12
7243	G12
7244	F13
7245	G15
7246	G14
7247	I13
7248	H12
7261	I11
7291	E20
9201	E 2
9202	E 2
9205	E 1
9207	E 4
9208	E 4
9211	D 3
9212	E 3
9213	M 9
9214	M 9
9215	M 9
9216	M 9
9217	N 9
9244	D14
9269	I22
9281	G17
9282	G17


(NOT FOR VERSIONS -/37 & -/26)
TRANSFORMER
1202
230V
120V
150 C T.F.
5A 1206
1.0A 1211
1.0A 1212
3204 1R
1208 1.6A
1210
PA
+12V/ +5V6
-30V
FTD
VCD
1231
1220
1235
2221 100n
D3SBA20
6220
2222 100n
2224 6800u/35V
2225 4700u/35V
2231 100n
6231 1N5392
6232 1N5392
6233 1N5392
6234 1N5392
2232 100n
2233 2200u/16V
FOR VCD
7231 BD241BF
3231 220R
7232 BC558
2235 220u
+12A
2234 100u/16V
6235 BZX79B5V6
7233 BC548
AMP_ON
FOR 18W & 12W* ONLY
7241 BD437
+10.8V
FOR 12W VERSION ONLY
FOR ASSMBY ONLY
7242 BD242BF
+12M
to pin 7 of 1223 7232
7243 BC547B
7244 BC557B
7245 BC557B
7246 BC547B
7248 BC547B
7261 BF423
7247 BF423
-32V4
+5V6
+5V
to pin 9 of 1224 3211
to pin 3 of 1237
1222
STDBY
F1
F2
-32V
PWD DN
Version Indication
1237
1223
1224
TO 7233 3276
AMP_ON
7291 AN7164
STDBY
RIPPLE
2 X 3 OHM
1290
HEATSINK

	/17	/01	/00	/10
3201	YES	-	-	-
5202	-	YES	YES	YES
1205	-	1EC 2A	-	-
1206	UL 6.3A	1EC 5A	1EC 5A	1EC 5A
1202	-	YES	-	-
9205	YES	-	YES	YES
9201	YES	-	-	-
9202	YES	-	-	-
9208	-	-	-	YES

DC at the pin of AN7164(18W) @230Vac

pin	1	2	3	4	5	6	7	8	9	10	11	12
(volts)	24	1.20	-	1.20	-	6.3	13.2	22.5	-	13.2	22.5	25.4

DC at the pin of AN7164(12W) @230Vac

pin	1	2	3	4	5	6	7	8	9	10	11	12
(volts)	22.1	1.20	0	1.20	0	5	12.0	20.6	⊥	12.0	20.6	23.4

STD_BY / AMP_ON	H	Z	L
H	SET ON VCD OFF	SET ON VCD ON	
L			SET GOES STD_BY

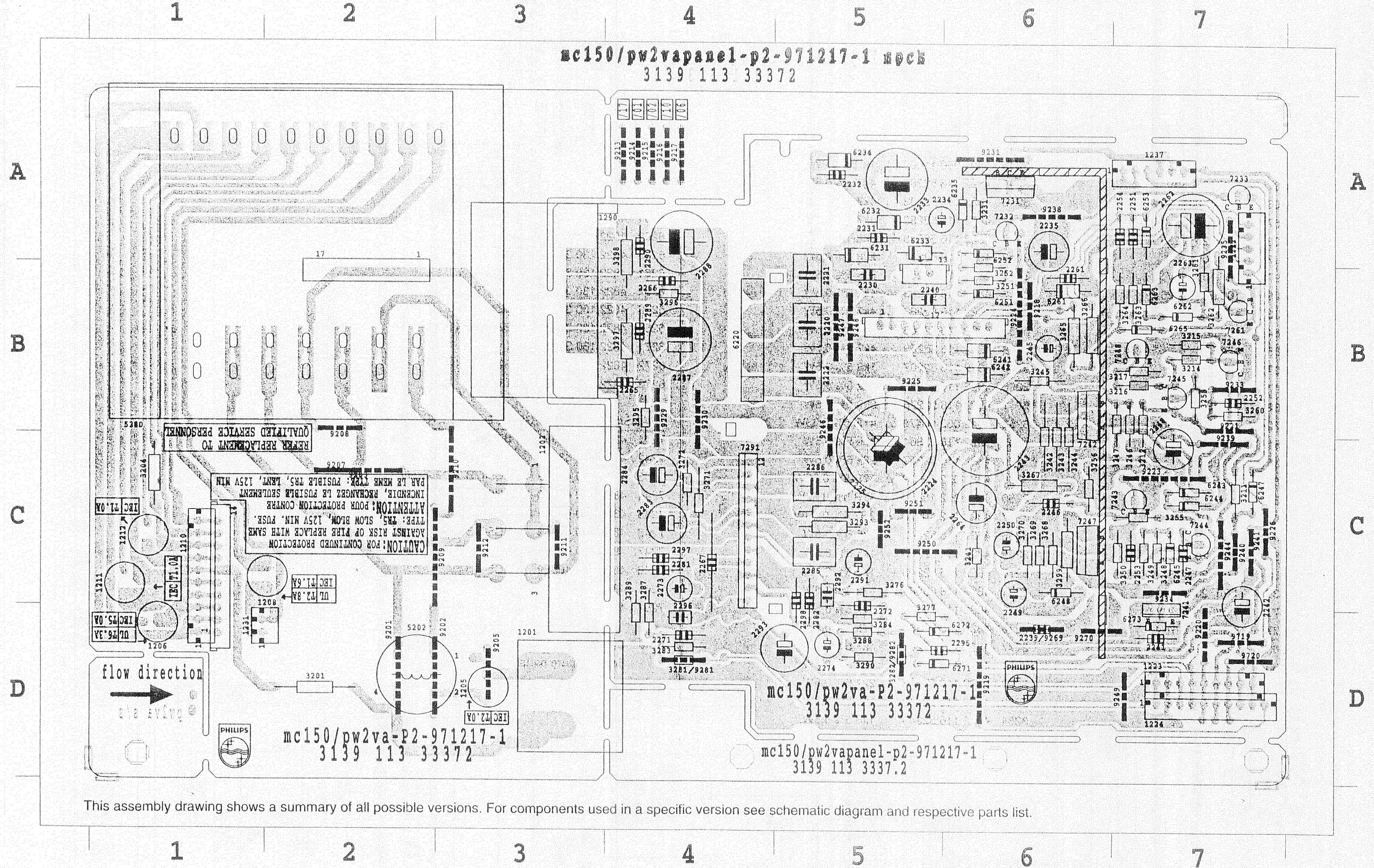
# VALUES FOR 12W	
3281 / 3282	2K2
3283 / 3284	1K5
2271 / 2272	8N2
2248	220u
9244	YES

* For provision only

Note : Some values may varies, see variant table and respective parts list for correct value.

POWER 2VA COMPONENT LAYOUT

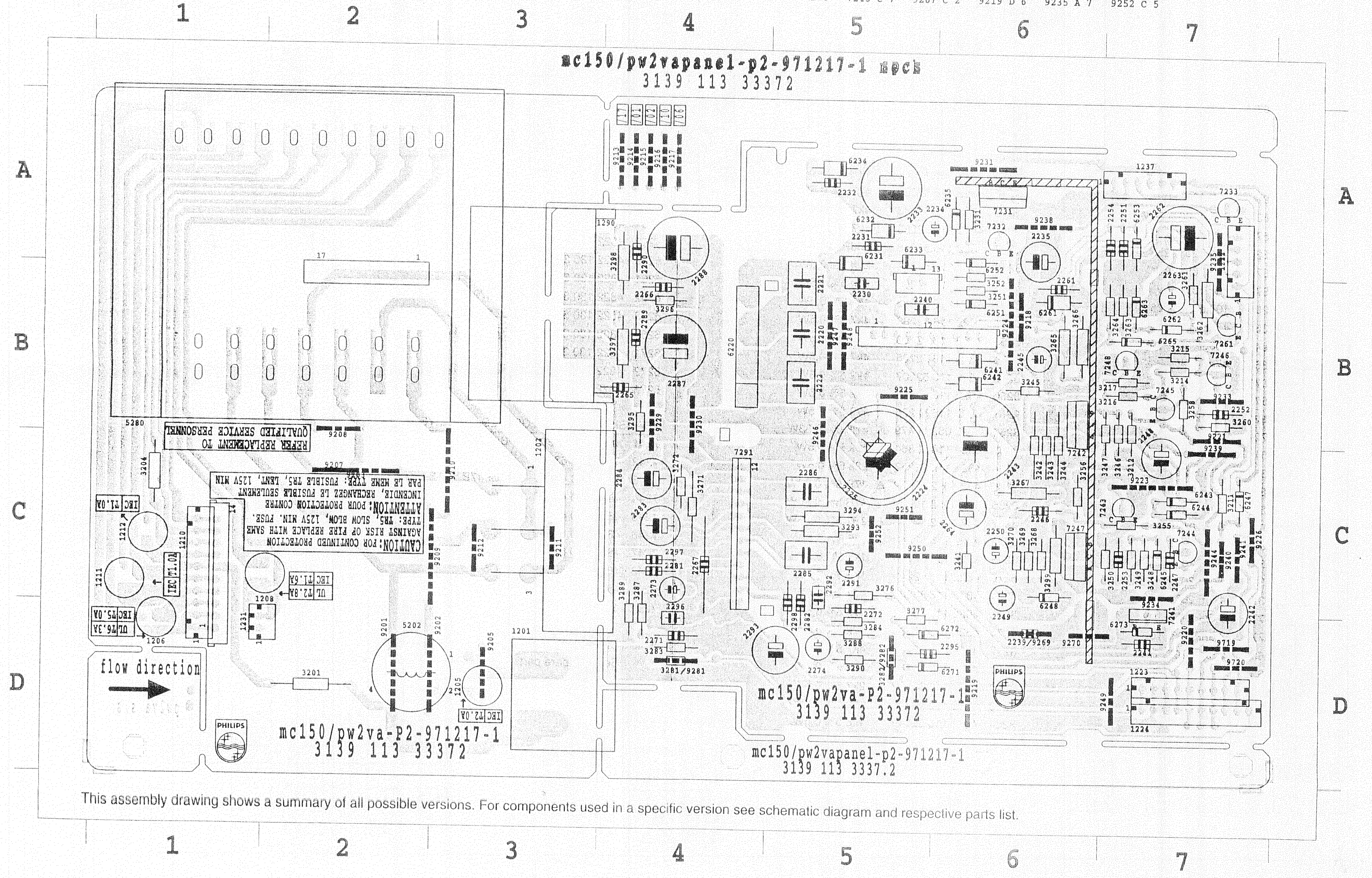
1205 D 3	2220 B 5	2240 B 5	2253 C 7	2274 D 5	2292 C 5	3216 B 7	3250 C 7	3266 B 6	3284 D 5	5202 D 2	6245 C 7	6273 D 7	7261 B 7	9213 A 4	9226 C 7	9246 B 5	9720 D 7			
1206 D 1	2221 B 5	2241 D 7	2254 A 7	2281 C 4	2293 D 5	3217 B 7	3251 B 6	3267 C 6	3287 D 4	5280 B 2	6247 C 7	7231 A 6	7291 C 4	9214 A 4	9229 B 4	9247 B 5	----			
1208 C 2	2222 B 5	2242 C 7	2261 B 6	2282 C 5	2295 D 5	3231 A 6	3252 B 6	3268 C 6	3288 D 5	6220 B 4	6248 C 6	7232 A 6	9201 D 2	9215 A 4	9230 B 4	9248 B 5				
1210 C 1	2224 C 5	2243 B 6	2262 A 7	2283 C 4	2296 D 4	3241 C 6	3255 C 7	3269 C 6	3289 D 4	6231 A 5	6251 B 6	7233 A 7	9202 D 2	9216 A 4	9231 A 6	9249 D 7				
1211 C 1	2225 C 5	2245 B 6	2263 B 7	2284 C 4	2297 C 4	3242 B 6	3256 C 6	3270 C 6	3290 D 5	6232 A 5	6252 A 6	7241 C 7	9203 C 2	9217 A 4	9233 B 7	9250 C 5				
1212 C 1	2230 B 5	2246 C 6	2264 C 6	2285 C 5	2298 C 5	3243 B 6	3258 B 7	3271 C 4	3293 C 5	6233 A 5	6253 A 7	7242 B 6	9205 D 3	9218 B 6	9234 C 7	9251 C 5				
1222 A 7	2231 A 5	2247 C 7	2265 B 4	2286 C 5	3201 D 2	3244 B 6	3260 B 7	3272 C 4	3294 C 5	6234 A 5	6261 B 6	7243 C 7	9207 C 2	9219 D 6	9235 A 7	9252 C 5				


1
2
3
4
5
6
7
A
B
C
D
mc150/pw2vapanel-p2-971217-1 mpcb
3139 113 33372
flow direction
PHILIPS
mc150/pw2va-P2-971217-1
3139 113 33372
mc150/pw2vapanel-p2-971217-1
3139 113 3337.2

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

POWER 2VA COMPONENT LAYOUT

1205 D 3 … 9720 D 7 (component position table as above)


1
2
3
4
5
6
7
A
B
C
D
mc150/pw2vapanel-p2-971217-1 mpcb
3139 113 33372
flow direction
PHILIPS
mc150/pw2va-P2-971217-1
3139 113 33372
mc150/pw2vapanel-p2-971217-1
3139 113 3337.2

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

BRIEF INTRODUCTION OF THE AF5 BOARD

The AF5 Board consists of the following features :

a. SOFAC IC
SOFAC IC TEA6321 (7553) which includes functions such as source selection, loudness control, dynamic bass control, treble control, front/rear volume control and muting function. Sound features such as DBB, DSC and IS are controllable via I²C data from the microprocessor.

The SOFAC IC caters for 4 input sources, namely tuner, tape, CD and AUX. It also has a MONO input which is tied to ground via 100n. In our application , software will switch the input source to MONO input during STANDBY mode and some other occasions where noise from other input sources is undesirable.

Note that the input to the SOFAC IC must be ac coupled to prevent 'plop' noise. Input networks are included to provide appropriate attenuation for various sources.

b. KARAOKE MIC. MIXING
Karaoke Mic. Mixing can be configured to cater for one of the following :
NK : Non Karaoke.
SK : Simple Karaoke which caters for mic. mixing with additional mic. amplifier board.
FK : Full Karaoke with vocal fader and echo effect with additional karaoke board.

c. DOLBY PRO LOGIC (DPL) INTERFACE
DPL Interface can be configured to cater for DPL and also DPL with one of the karaoke functions.

d. LINE OUT
Line Out with JST XH connector for connection to LINE OUT cinch socket.

e. SUB-WOOFER OUTPUT
Sub-Woofer Output with cinch socket for connection to active sub-woofer speaker.

f. INCREDIBLE SURROUND
Incredible Surround effect using transistor circuit BC847C (7517, 7518, 7519, 7520) to create phase shifting and spatial effect.

g. HEADPHONE AMPLIFIER
Headphone Amplifier using Op-Amp. NJM4556AM (7501).

h. CD STANDBY SWITCH
CD Standby control circuit using transistors BC327-25 (7515) and BC847C (7516) which switches on the supply to CD servo control IC , HF circuit and the laser light pen in CD mode only.

i. HEADPHONE SENSING CIRCUIT
Headphone Sensing circuit to mute centre and surround channels in DPL application.

j. ATTENUATION NETWORK
Attenuation network is provided at the output of the AF5 Board for interfacing with the power board of different output power.

AF5 BOARD - VARIATION TABLE

AF5 Boards application

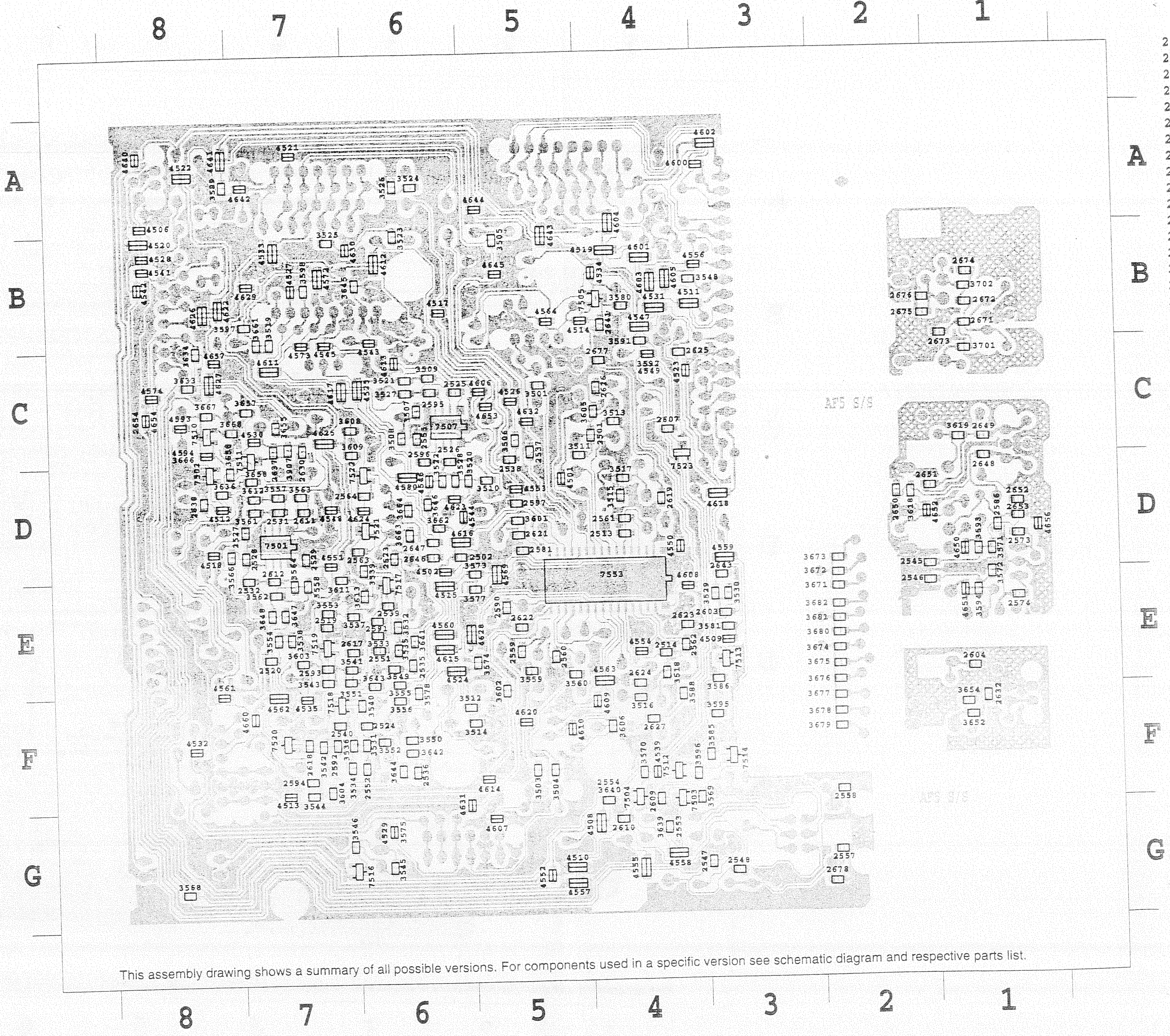
50780	AS680C/21/30
51520	AS680C/22/34

Variation table for AF5 Board

	50780	51520
61	x	-
1577	x	-
2525,2526	22p	-
2555	100p	-
2595,2596	680p	-
2644,2645	0,47μ	-
3507,3508	15k	-
3509,3510	68K	-
3521,3522	10k	-
3527,3528	15k	-
3605,3606	2k2	-
3661,3662	5k6	-
3675	10k	5k6
4501,4502	-	x
7507	x	-
9515	x	-

x = Item in use.

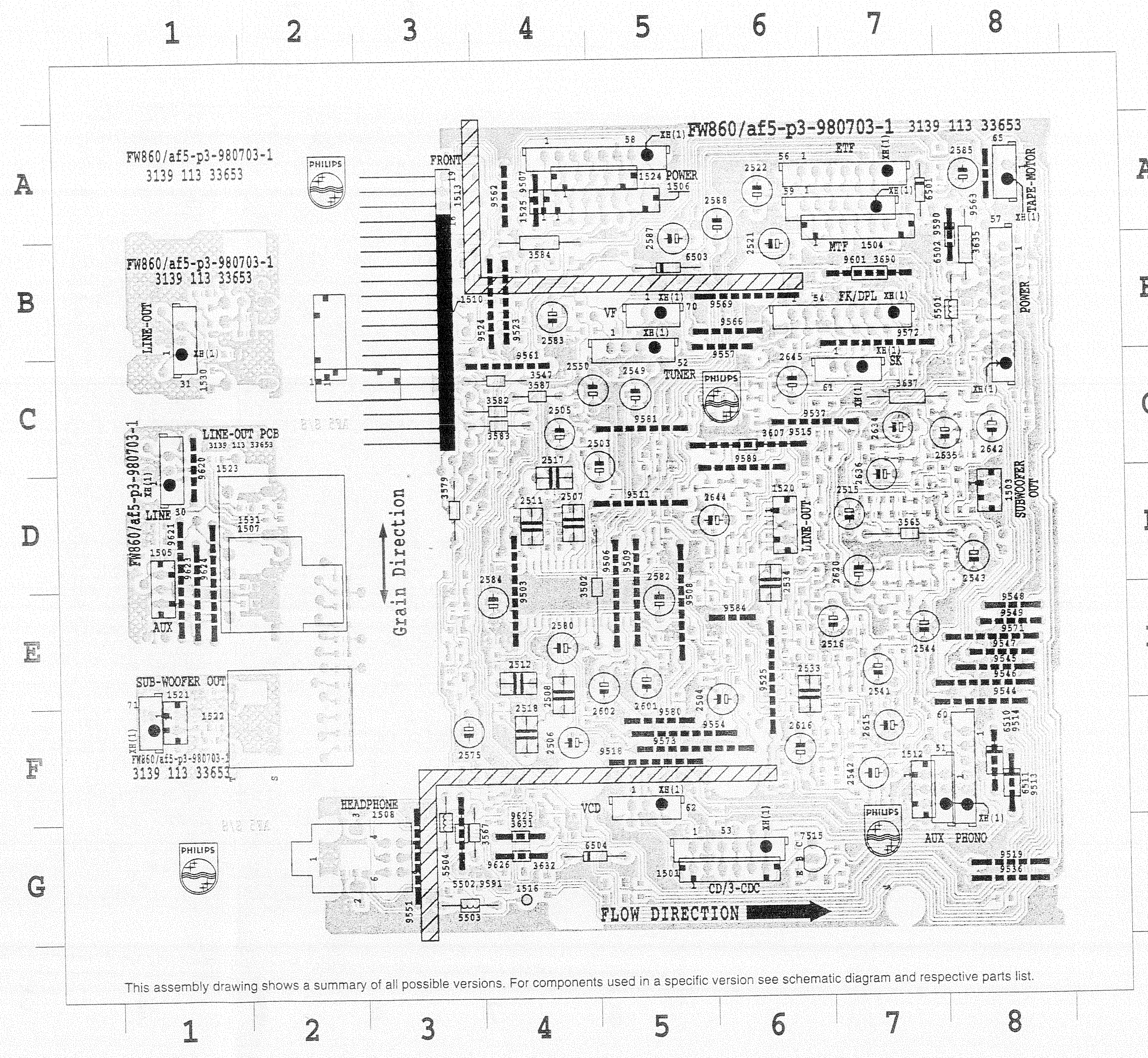
CHIP LAYOUT



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

2501	C 4	2618	F 7	3528	D 6	3596	F 4	4502	D 6	4580	D 6	7514	F 3
2502	D 6	2619	D 4	3529	E 3	3597	B 7	4506	A 8	4593	C 8	7516	G 7
2513	D 4	2621	D 5	3530	E 3	3598	B 7	4508	G 4	4594	C 8	7517	E 6
2514	E 4	2622	E 5	3531	F 6	3601	D 5	4509	E 3	4600	A 3	7518	F 7
2519	E 7	2623	E 4	3532	E 6	3602	E 5	4510	G 5	4601	B 4	7519	E 7
2520	E 7	2624	E 4	3533	E 6	3603	E 7	4511	B 4	4602	A 3	7520	F 7
2523	D 6	2625	C 4	3534	F 7	3604	F 7	4512	D 8	4603	B 4	7521	D 6
2524	F 6	2626	C 4	3535	E 6	3605	C 4	4513	F 7	4604	A 4	7522	D 6
2525	C 6	2627	F 4	3536	F 7	3606	F 4	4514	B 4	4605	B 4	7523	C 4
2526	C 6	2630	C 7	3537	E 6	3608	C 6	4515	E 6	4606	C 5	7553	E 4
2527	D 7	2632	F 1	3538	E 7	3609	C 6	4517	B 6	4607	G 5		
2528	D 7	2637	C 7	3539	D 6	3611	E 7	4518	D 8	4608	E 4		
2529	D 7	2638	D 8	3540	F 6	3612	D 7	4519	B 4	4609	F 4		
2531	D 7	2641	B 4	3541	E 7	3613	E 6	4520	B 8	4610	F 5		
2532	E 7	2643	E 3	3542	F 7	3618	D 2	4521	A 7	4611	C 7		
2535	E 6	2646	D 6	3543	E 7	3619	C 1	4522	A 8	4612	B 6		
2536	F 6	2647	D 6	3544	F 7	3633	C 8	4523	C 4	4613	C 6		
2537	C 5	2648	D 1	3545	G 6	3634	C 8	4524	E 6	4614	F 5		
2538	C 5	2649	C 1	3546	G 7	3636	D 8	4525	C 6	4615	E 6		
2539	E 6	2650	D 2	3548	B 4	3639	G 4	4526	C 5	4616	D 6		
2540	F 7	2651	D 2	3549	E 6	3640	F 4	4527	B 7	4617	C 7		
2545	D 2	2652	D 1	3550	F 6	3641	E 6	4528	B 8	4618	D 3		
2546	E 2	2653	D 1	3551	E 7	3642	F 6	4529	G 6	4620	F 5		
2547	G 3	2654	C 8	3552	F 6	3643	E 6	4530	C 7	4622	B 8		
2548	G 3	2671	B 1	3553	E 7	3644	F 6	4531	B 4	4623	D 6		
2551	E 6	2672	B 1	3554	E 7	3645	B 6	4532	F 8	4624	D 6		
2552	F 6	2673	B 1	3555	E 6	3646	D 6	4533	B 7	4625	C 7		
2553	G 4	2674	B 1	3556	F 6	3647	E 7	4534	B 4	4626	B 8		
2554	F 4	2675	B 2	3557	D 7	3648	E 7	4535	F 7	4627	C 8		
2555	C 6	2676	B 2	3558	E 7	3652	F 1	4539	F 4	4628	E 5		
2557	G 2	2677	C 4	3559	E 5	3654	F 1	4541	B 8	4629	B 7		
2558	F 2	2678	G 2	3560	E 5	3655	C 7	4542	B 8	4630	B 6		
2559	E 5	3501	C 5	3561	D 7	3656	D 8	4543	B 6	4631	F 6		
2560	E 5	3503	F 5	3562	E 7	3657	C 7	4544	D 6	4632	C 5		
2561	D 4	3504	F 5	3563	D 7	3658	D 7	4545	B 7	4640	A 8		
2562	E 4	3505	B 5	3564	E 7	3661	B 7	4546	D 6	4641	A 8		
2563	D 6	3506	C 5	3566	D 8	3662	D 6	4547	B 4	4642	A 7		
2564	D 6	3507	C 6	3568	G 8	3663	D 6	4548	D 7	4643	B 5		
2573	D 1	3508	C 6	3569	F 4	3664	D 6	4549	C 4	4644	A 5		
2574	E 1	3509	C 6	3570	F 4	3666	C 8	4550	D 4	4645	B 5		
2581	D 5	3510	D 5	3571	D 1	3667	C 8	4551	D 7	4650	D 1		
2586	D 1	3511	C 5	3572	E 1	3668	C 8	4552	G 5	4651	E 1		
2590	E 5	3512	F 5	3573	D 5	3671	E 2	4553	D 5	4652	D 2		
2591	E 6	3513	C 4	3574	E 5	3672	E 2	4554	E 4	4653	C 5		
2592	F 7	3514	F 5	3575	G 6	3673	D 2	4555	G 4	4654	C 8		
2593	E 7	3515	D 4	3577	E 5	3674	E 2	4556	B 4	4656	D 1		
2594	F 7	3516	F 4	3578	F 6	3675	E 2	4557	G 5	4657	C 8		
2595	C 6	3517	D 4	3580	B 4	3676	E 2	4558	G 4	4660	F 7		
2596	C 6	3518	E 4	3581	E 3	3677	F 2	4559	D 3	7501	D 7		
2597	D 5	3519	B 7	3585	F 3	3678	F 2	4560	E 6	7502	D 8		
2603	E 3	3520	D 5	3586	E 3	3679	F 2	4561	F 8	7503	F 4		
2604	E 1	3521	C 6	3588	F 4	3680	E 2	4562	F 7	7504	F 4		
2607	C 4	3522	D 6	3589	A 8	3681	E 2	4563	E 4	7505	B 4		
2609	F 4	3523	B 6	3591	B 4	3682	E 2	4564	B 5	7507	C 6		
2610	G 4	3524	A 6	3592	C 4	3701	C 1	4569	D 5	7510	C 8		
2611	D 7	3525	B 7	3593	D 1	3702	B 1	4572	B 7	7511	C 7		
2612	E 7	3526	A 6	3594	E 1	3907	C 7	4573	B 7	7512	F 4		
2617	E 7	3527	C 6	3595	F 3	4501	D 5	4574	C 8	7513	E 3		

COMPONENT LAYOUT


FW860/af5-p3-980703-1
3139 113 33653
FRONT
POWER
ETF
TAPE-MOTOR
MTF
FK/DPL
VF
TUNER
SK
POWER
LINE-OUT
LINE-OUT PCB
LINE
AUX
SUB-WOOFER OUT
SUBWOOFER OUT
HEADPHONE
VCD
CD/3-CDC
AUX PHONO
Grain Direction
FLOW DIRECTION
PHILIPS

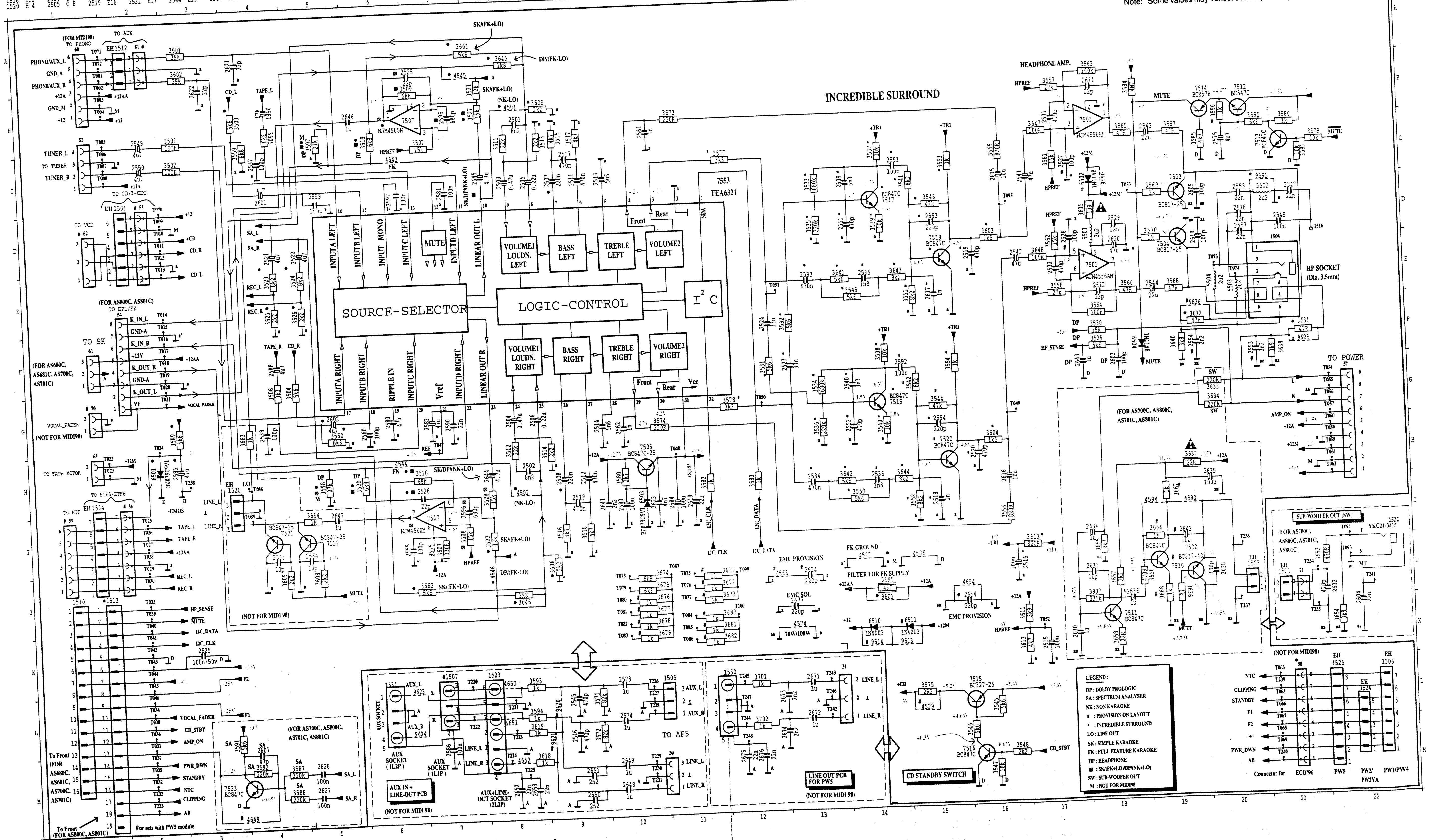
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

30	C	1	2580	E	4	9536	G	8
31	B	1	2582	E	5	9537	C	6
51	F	7	2583	B	4	9544	F	8
52	B	5	2584	E	4	9545	E	8
53	G	6	2585	A	8	9546	E	8
54	B	7	2587	B	5	9547	E	8
56	A	7	2588	A	6	9548	E	8
57	B	8	2601	E	5	9549	E	8
58	A	5	2602	E	5	9551	G	3
59	A	7	2615	F	7	9554	F	5
60	F	8	2616	F	6	9557	B	6
61	C	7	2620	D	7	9561	C	4
62	F	5	2634	C	7	9562	A	4
65	A	8	2635	C	8	9563	A	8
70	B	5	2636	D	7	9566	B	6
71	F	1	2642	C	8	9569	B	6
1501	G	6	2644	D	6	9571	E	8
1503	D	8	2645	C	6	9572	B	7
1504	A	7	3502	E	5	9573	F	5
1505	D	1	3547	C	4	9580	F	5
1506	A	5	3565	D	7	9581	C	5
1507	E	2	3567	G	3	9584	E	6
1508	G	2	3579	D	3	9589	C	6
1510	B	3	3582	C	4	9590	B	8
1512	F	7	3583	C	4	9591	G	3
1513	B	3	3584	B	4	9601	B	7
1516	G	4	3587	C	4	9620	C	1
1520	D	6	3607	C	6	9621	D	1
1521	F	1	3631	G	4	9623	E	1
1522	F	2	3632	G	4	9624	D	1
1523	D	2	3635	B	8	9625	G	4
1524	A	5	3637	C	7	9626	G	4
1525	A	5	3690	B	7			
1530	B	2	5501	B	8			
1531	C	2	5502	G	3			
2503	C	5	5503	G	3			
2504	E	6	5504	G	3			
2505	C	4	6501	A	7			
2506	F	4	6502	B	8			
2507	D	4	6503	B	5			
2508	E	4	6504	G	4			
2511	D	4	6510	F	8			
2512	E	4	6511	F	8			
2515	D	7	7515	G	6			
2516	E	7	9503	E	4			
2517	D	4	9506	E	5			
2518	F	4	9507	A	4			
2521	B	6	9508	E	5			
2522	A	6	9509	E	5			
2533	E	6	9511	D	5			
2534	D	6	9513	F	8			
2541	E	7	9514	F	8			
2542	F	7	9515	C	6			
2543	D	8	9518	F	5			
2544	E	7	9519	G	8			
2549	C	5	9523	B	4			
2550	C	5	9524	B	4			
2575	F	3	9525	E	6			

CIRCUIT DIAGRAM

1501	C 2
1503	J20
1504	H 1
1505	K11
1506	L22
1507	K 7
1508	E21
1510	J 1
1512	A 2
1513	J 1
1516	D22
1520	H 4
1521	J21
1522	I22
1523	K 8
1524	L22
1525	L22
1530	K11
1531	K 6
2501	B 8
2502	H 8
2503	C 8
2504	G 8
2505	C 8
2506	G 8
2507	C 9
2508	H 9
2511	C 9
2512	H 9
2513	C10
2514	G10
2515	K17
2516	J16
2517	C 9
2518	H 9
2519	E16
2520	H16
2521	D 4
2522	D 5
2523	F13
2524	F12
2525	A 7
2526	H 7
2527	C17
2528	D17
2529	D18
2531	B17
2532	E17
2533	E13
2534	H13
2535	E14
2536	H14
2537	C 4
2538	G 4
2539	C14
2540	G14
2541	C17
2542	E17
2543	C19
2544	E19
2545	L 9
2546	L 9
2547	D21
2548	D21
2549	B 2
2550	C 2
2551	D14
2552	G14
2553	F20
2554	F19
2555	I 6
2557	D20
2558	D20
2559	C 5
2560	G 6
2561	B10
2562	G10
2563	I 4
2564	I 5
2573	K10
2574	L10
2575	C20
2580	G 6
2581	C 7
2582	G 7
2583	I10
2584	I11
2585	H 3
2586	M 7
2587	B 4
2588	F 4
2590	G 7
2591	C15
2592	F15
2593	D15
2594	G15
2595	B 7
2596	I 7
2597	C 6
2601	C 4
2602	G 5
2603	F18
2604	K22
2607	L 4
2609	D20
2610	E20
2611	B18
2612	E18
2615	C16
2616	H16
2617	E15
2618	I15
2619	I11
2620	E18
2621	A 4
2622	A 3
2623	I10
2624	J13
2625	K 3
2626	M 5
2627	M 5
2630	K17
2632	J22
2634	I18
2635	H20
2636	J18
2637	J18
2638	J20
2641	I10
2642	I19
2643	F18
2644	H 8
2645	C 8
2646	B 6
2647	I 5
2648	M10
2649	M10
2650	M 9
2651	M 9
2652	M 8
2653	M 8
2654	J16
2671	L13
2672	L13
2673	L12
2674	L12
2675	M12
2676	M12
2677	J13
2678	D20
30	M10
31	K13
3501	B 3
3502	C 3
3503	B 4
3504	G 4
3505	B 4
3506	G 4
3507	C 7
3508	I 7
3509	B 7
3510	H 7
3511	C 8
3512	H 8
3513	C 9
3514	H 9
3515	B 9
3516	I 9
3517	B 9
3518	I 9
3519	B 6
3520	H 6
3521	B 8
3522	I 8
3523	E 4
3524	E 5
3525	E 4
3526	E 5
3527	B 8
3528	H 8
3529	F18
3530	F18
3531	F12
3532	F13
3533	C13
3534	G13
3535	D13
3536	G13
3537	C14
3538	F14
3539	D14
3540	G14
3541	C15
3542	G15
3543	D15
3544	G15
3545	L16
3546	M15
3547	M16
3548	M16
3549	E14
3550	I14
3551	E15
3552	I15
3553	C15
3554	F15
3555	C16
3556	I16
3557	B17
3558	E17
3559	C 4
3560	G 5
3561	C17
3562	D17
3563	B18
3564	F18
3565	C18
3566	E18
3567	C19
3568	E19
3569	D19
3570	D19
3571	L 9
3572	L 9
3573	B11
3574	G11
3575	L15
3577	C12
3578	G12
3579	C22
3580	H10
3581	C21
3582	H11
3583	H12
3584	B18
3585	C20
3586	C21
3587	M 4
3588	M 4
3589	G 2
3591	L 3
3592	M 4
3593	L 8
3594	L 8
3595	C21
3596	B20
3597	B 5
3598	H 5
3601	A 3
3602	A 3
3603	D16
3604	H16
3605	B 9
3606	J 9
3607	I 7
3608	J 5
3609	J 4
3611	K16
3612	K16
3613	I17
3618	M 8
3619	L 8
3631	F21
3632	F19
3633	G20
3634	G20
3635	D18
3636	J19
3637	H19
3639	F21
3640	F19
3641	E14
3642	H14
3643	E15
3644	H15
3645	A 8
3646	J 8
3647	C17
3648	E17
3652	J21
3654	K22
3655	J18
3656	J19
3657	J18
3658	K18
3661	A 8
3662	J 7
3663	G 4
3664	I 5
3666	I19
3667	I19
3668	J19
3671	J12
3672	J12
3673	J12
3674	J10
3675	J10
3676	J10
3677	J10
3678	K10
3679	K10
3680	J12
3681	K12
3682	K12
3690	J14
3701	L12
3702	L12
3907	J18
4501	B 8
4502	H 8
4506	J15
4527	J14
4529	L15
4543	C 6
4544	H 6
4545	A 7
4546	J 8
4549	M 4
4563	J12
4574	K13
4593	I19
4594	I19
4650	L 8
4651	L 8
4652	M 8
4654	J16
51	A 2
52	B 1
53	C 2
54	E 2
5501	D18
5502	D21
5503	E20
5504	E20
56	H 2
57	G22
58	L21
59	I 1
60	A 1
61	F 1
62	D 1
65	G 1
6501	H 2
6502	C18
6503	H10
6504	F19
6510	K14
6511	K15
70	G 1
71	J21
7501	B18
7501	E18
7502	J19
7503	D19
7504	E19
7505	H10
7507	B 6
7507	I 7
7510	J19
7511	K18
7512	B20
7513	C21
7514	B20
7515	L15
7516	M15
7517	D15
7518	G15
7519	D15
7520	H15
7521	I 4
7522	I 5
7523	M 3
7553	C12
9513	K14
9514	K14
9515	I 7
9590	C18
9591	D21
9601	J14
9620	L 9
9621	L 9
9623	L 6
9624	L 6
9625	F21
9626	F19

Note: Some values may varies, see respective parts list for correct value.


INCREDIBLE SURROUND
HEADPHONE AMP.
SOURCE-SELECTOR
LOGIC-CONTROL
I2C
VOLUME1 LOUDN. LEFT
BASS LEFT
TREBLE LEFT
VOLUME2 LEFT
VOLUME1 LOUDN. RIGHT
BASS RIGHT
TREBLE RIGHT
VOLUME2 RIGHT
MUTE
7553 TEA6321
NJM4560M
NJM4556AM
HP SOCKET (Dia. 3.5mm)
TO POWER
SUB-WOOFER OUT (SW)
TO AF5
AUX IN + LINE-OUT PCB (NOT FOR MIDI 98)
LINE OUT PCB FOR PW5 (NOT FOR MIDI 98)
CD STANDBY SWITCH
EMC PROVISION
FK GROUND
FILTER FOR FK SUPPLY
EMC SOL
LEGEND :
DP : DOLBY PROLOGIC
SA : SPECTRUM ANALYSER
NK : NON KARAOKE
# : PROVISION ON LAYOUT
* : INCREDIBLE SURROUND
LO : LINE OUT
SK : SIMPLE KARAOKE
FK : FULL FEATURE KARAOKE
HP : HEADPHONE
■ : SK/(FK+LO)/DP/(NK+LO)
SW : SUB-WOOFER OUT
M : NOT FOR MIDI98
(NOT FOR MIDI98)
Connector for ECO'96 PW5 PW2/PW2VA PW1/PW4
To Front (FOR AS680C, AS681C, AS700C, AS701C)
To Front (FOR AS800C, AS801C)
For sets with PW5 module

9620
9621 } Provision for Dual Aux-In

1531
9623
9624 } For Power 5 Only

4650
4651 } Used when 1507 OR 1523 is used

ELECTRICAL PARTS LIST - AF5 BOARD

MISCELLANEOUS

1508	4822 267 40898	Headphone Socket
1510	4822 265 41325	Connector 16 pins

CAPACITORS

2501	4822 126 10525	8,2nF 10% 63V
2502	4822 126 10525	8,2nF 10% 63V
2503	4822 124 41407	0,47µF 20% 63V
2504	4822 124 41407	0,47µF 20% 63V
2505	4822 124 40746	0,22µF 20% 63V
2506	4822 124 40746	0,22µF 20% 63V
2507	4822 121 42408	220nF 5% 63V
2508	4822 121 42408	220nF 5% 63V
2511	4822 121 51252	470nF 5% 63V
2512	4822 121 51252	470nF 5% 63V
2513	4822 122 32646	5,6nF 10% 50V
2514	4822 122 32646	5,6nF 10% 50V
2515	4822 124 81029	100µF 20% 25V
2516	4822 124 81029	100µF 20% 25V
2517	4822 121 51252	470nF 5% 63V
2518	4822 121 51252	470nF 5% 63V
2519	5322 122 32268	470pF 10% 50V
2520	5322 122 32268	470pF 10% 50V
2521	4822 124 40246	4,7µF 20% 63V
2522	4822 124 40246	4,7µF 20% 63V
2523	4822 126 12105	33nF 5% 63V
2524	4822 126 12105	33nF 5% 63V
2525	5322 122 32658	22pF 5% 50V
2526	5322 122 32658	22pF 5% 50V
2529	5322 122 32654	22nF 10% 63V
2531	5322 122 32268	470pF 10% 50V
2532	5322 122 32268	470pF 10% 50V
2533	4822 121 51252	470nF 5% 63V
2534	4822 121 51252	470nF 5% 63V
2535	4822 126 10847	1,8nF 10% 63V
2536	4822 126 10847	1,8nF 10% 63V
2537	5322 122 32531	100pF 5% 50V
2538	5322 122 32531	100pF 5% 50V
2539	4822 122 33891	3,3nF 10% 63V
2540	4822 122 33891	3,3nF 10% 63V
2541	4822 124 41407	0,47µF 20% 63V
2542	4822 124 41407	0,47µF 20% 63V
2543	4822 124 41751	47µF 20% 50V
2544	4822 124 41751	47µF 20% 50V
2547	5322 122 32654	22nF 10% 63V
2548	4822 126 10002	100nF 20% 25V
2549	4822 124 40246	4,7µF 20% 63V
2550	4822 124 40246	4,7µF 20% 63V
2551	5322 122 32268	470pF 10% 50V
2552	5322 122 32268	470pF 10% 50V
2555	5322 122 32531	100pF 5% 50V
2557	5322 122 32654	22nF 10% 63V
2558	5322 122 32654	22nF 10% 63V
2559	5322 122 32531	100pF 5% 50V
2560	5322 122 32531	100pF 5% 50V
2561	5322 122 34123	1nF 10% 50V
2562	5322 122 34123	1nF 10% 50V
2575	4822 124 40246	4,7µF 20% 63V
2580	4822 124 41751	47µF 20% 50V
2581	4822 126 10002	100nF 20% 25V
2582	4822 124 41751	47µF 20% 50V
2583	4822 124 81029	100µF 20% 25V
2584	4822 124 81029	100µF 20% 25V
2585	4822 124 41751	47µF 20% 50V
2587	4822 124 40246	4,7µF 20% 63V
2588	4822 124 40246	4,7µF 20% 63V
2590	5322 122 32654	22nF 10% 63V
2591	4822 126 10002	100nF 20% 25V
2592	4822 126 10002	100nF 20% 25V
2593	4822 122 33575	220pF 5% 50V
2594	4822 122 33575	220pF 5% 50V
2595	4822 122 32535	680pF 10% 63V
2596	4822 122 32535	680pF 10% 63V
2597	4822 126 10002	100nF 20% 25V
2601	4822 124 40246	4,7µF 20% 63V
2602	4822 124 40246	4,7µF 20% 63V
2609	5322 122 32531	100pF 5% 50V
2610	5322 122 32531	100pF 5% 50V
2611	5322 122 32658	22pF 5% 50V
2612	5322 122 32658	22pF 5% 50V
2615	4822 124 40246	4,7µF 20% 63V
2616	4822 124 40246	4,7µF 20% 63V
2617	5322 122 34123	1nF 10% 50V
2618	5322 122 34123	1nF 10% 50V
2619	5322 122 32654	22nF 10% 63V
2620	4822 124 40433	47µF 20% 25V
2621	5322 122 32658	22pF 5% 50V
2622	5322 122 32658	22pF 5% 50V
2623	5322 126 10223	4,7nF 10% 63V
2625	4822 126 10002	100nF 20% 25V
2641	4822 122 33175	2,2nF 20% 50V
2644	4822 124 41407	0,47µF 20% 63V
2645	4822 124 41407	0,47µF 20% 63V
2654	4822 122 33575	220pF 5% 50V
2678	5322 122 32654	22nF 10% 63V

RESISTORS

3501	4822 051 20101	100R 5% 0,1W
3502	4822 116 52175	100R 5% 0,5W
3503	4822 051 20562	5k6 5% 0,1W
3504	4822 051 20562	5k6 5% 0,1W
3505	4822 051 20332	3k3 5% 0,1W
3506	4822 051 20332	3k3 5% 0,1W
3507	4822 051 20153	15k 5% 0,1W
3508	4822 051 20153	15k 5% 0,1W
3509	4822 051 20683	68k 5% 0,1W
3510	4822 051 20683	68k 5% 0,1W
3511	4822 051 20223	22k 5% 0,1W
3512	4822 051 20223	22k 5% 0,1W
3513	4822 117 11449	2k2 1% 0,1W
3514	4822 117 11449	2k2 1% 0,1W
3515	4822 051 20472	4k7 5% 0,1W
3516	4822 051 20472	4k7 5% 0,1W
3517	4822 051 20472	4k7 5% 0,1W
3518	4822 051 20472	4k7 5% 0,1W
3521	4822 117 10833	10k 1% 0,1W
3522	4822 117 10833	10k 1% 0,1W
3523	4822 051 20822	8k2 5% 0,1W
3524	4822 051 20822	8k2 5% 0,1W
3525	4822 051 20332	3k3 5% 0,1W
3526	4822 051 20332	3k3 5% 0,1W
3527	4822 051 20153	15k 5% 0,1W
3528	4822 051 20153	15k 5% 0,1W
3531	4822 051 20562	5k6 5% 0,1W
3532	4822 051 20562	5k6 5% 0,1W
3533	4822 051 20684	680k 5% 0,1W
3534	4822 051 20684	680k 5% 0,1W
3535	4822 117 13579	220k 1% 0,1W
3536	4822 117 13579	220k 1% 0,1W
3537	4822 117 10833	10k 1% 0,1W
3538	4822 117 10833	10k 1% 0,1W
3539	4822 117 10833	10k 1% 0,1W
3540	4822 117 10833	10k 1% 0,1W
3541	4822 051 20822	8k2 5% 0,1W
3542	4822 051 20822	8k2 5% 0,1W
3543	4822 117 10834	47k 1% 0,1W
3544	4822 117 10834	47k 1% 0,1W
3545	4822 051 20562	5k6 5% 0,1W
3546	4822 051 20562	5k6 5% 0,1W
3547	4822 116 83864	10k 5% 0,5W
3548	4822 117 11449	2k2 1% 0,1W
3549	4822 051 20562	5k6 5% 0,1W
3550	4822 051 20562	5k6 5% 0,1W
3551	4822 051 20822	8k2 5% 0,1W
3552	4822 051 20822	8k2 5% 0,1W
3553	4822 051 10102	1k 2% 0,25W
3554	4822 051 10102	1k 2% 0,25W
3555	4822 117 11454	820R 1% 0,1W
3556	4822 117 11454	820R 1% 0,1W
3557	4822 051 20273	27k 5% 0,1W
3558	4822 051 20273	27k 5% 0,1W
3559	4822 051 20822	8k2 5% 0,1W
3560	4822 051 20822	8k2 5% 0,1W
3561	4822 051 20153	15k 5% 0,1W
3562	4822 051 20153	15k 5% 0,1W
3563	4822 051 20154	150k 5% 0,1W
3564	4822 051 20154	150k 5% 0,1W
3565	4822 116 52195	47R 5% 0,5W
3566	4822 051 20479	47R 5% 0,1W
3567	4822 116 52195	47R 5% 0,5W
3568	4822 051 20479	47R 5% 0,1W
3569	4822 051 10102	1k 2% 0,25W
3570	4822 051 10102	1k 2% 0,25W
3573	4822 117 11503	220R 1% 0,1W
3574	4822 117 11503	220R 1% 0,1W
3575	4822 051 20228	2R2 5% 0,1W
3577	4822 051 20472	4k7 5% 0,1W
3578	4822 051 20472	4k7 5% 0,1W
3579	4822 116 83864	10k 5% 0,5W
3580	4822 117 12955	2k7 1% 0,1W
3581	4822 117 10833	10k 1% 0,1W
3582	4822 050 11002	1k 1% 0,4W
3583	4822 050 11002	1k 1% 0,4W
3584	4822 050 24705	4M7 1% 0,6W
3585	4822 051 20472	4k7 5% 0,1W
3586	4822 051 10102	1k 2% 0,25W
3589	4822 051 20562	5k6 5% 0,1W
3595	4822 051 20562	5k6 5% 0,1W
3601	4822 117 10834	47k 1% 0,1W
3602	4822 117 10834	47k 1% 0,1W
3603	4822 117 11139	1k5 1% 0,1W
3604	4822 117 11139	1k5 1% 0,1W
3605	4822 117 11449	2k2 1% 0,1W
3606	4822 117 11449	2k2 1% 0,1W
3611	4822 051 20392	3k9 5% 0,1W
3612	4822 051 20472	4k7 5% 0,1W
3613	4822 117 11454	820R 1% 0,1W
3631	4822 116 52195	47R 5% 0,5W
3632	4822 116 52195	47R 5% 0,5W
3635	4822 052 10109 △	10R 5% 0,33W
3639	4822 051 20392	3k9 5% 0,1W
3640	4822 051 20392	3k9 5% 0,1W
3641	4822 051 20562	5k6 5% 0,1W
3642	4822 051 20562	5k6 5% 0,1W
3643	4822 051 20822	8k2 5% 0,1W
3644	4822 051 20822	8k2 5% 0,1W
3647	4822 051 20101	100R 5% 0,1W
3648	4822 051 20101	100R 5% 0,1W
3661	4822 051 20562	5k6 5% 0,1W
3662	4822 051 20562	5k6 5% 0,1W
3674	4822 117 11507	6k8 1% 0,1W
3675	4822 117 10833	10k 1% 0,1W
3675	4822 051 20562	5k6 5% 0,1W
4501	4822 051 20008	0R Jumper 0805
4502	4822 051 20008	0R Jumper 0805

ELECTRICAL PARTS LIST - AF5 BOARD

RESISTORS

4506	4822 051 20008	0R Jumper 0805
4508	4822 051 10008	0R Jumper 1206
4509	4822 051 20008	0R Jumper 0805
4510	4822 051 10008	0R Jumper 1206
4512	4822 051 20008	0R Jumper 0805
4513	4822 051 20008	0R Jumper 0805
4514	4822 051 20008	0R Jumper 0805
4515	4822 051 10008	0R Jumper 1206
4517	4822 051 20008	0R Jumper 0805
4518	4822 051 20008	0R Jumper 0805
4519	4822 051 10008	0R Jumper 1206
4520	4822 051 10008	0R Jumper 1206
4521	4822 051 20008	0R Jumper 0805
4522	4822 051 10008	0R Jumper 1206
4523	4822 051 20008	0R Jumper 0805
4524	4822 051 10008	0R Jumper 1206
4525	4822 051 10008	0R Jumper 1206
4526	4822 051 20008	0R Jumper 0805
4528	4822 051 20008	0R Jumper 0805
4530	4822 051 20008	0R Jumper 0805
4531	4822 051 10008	0R Jumper 1206
4532	4822 051 20008	0R Jumper 0805
4533	4822 051 10008	0R Jumper 1206
4534	4822 051 20008	0R Jumper 0805
4535	4822 051 20008	0R Jumper 0805
4539	4822 051 20008	0R Jumper 0805
4541	4822 051 20008	0R Jumper 0805
4542	4822 051 20008	0R Jumper 0805
4548	4822 051 20008	0R Jumper 0805
4550	4822 051 20008	0R Jumper 0805
4551	4822 051 20008	0R Jumper 0805
4552	4822 051 20008	0R Jumper 0805
4553	4822 051 20008	0R Jumper 0805
4554	4822 051 20008	0R Jumper 0805
4555	4822 051 10008	0R Jumper 1206
4556	4822 051 20008	0R Jumper 0805
4557	4822 051 10008	0R Jumper 1206
4558	4822 051 10008	0R Jumper 1206
4559	4822 051 10008	0R Jumper 1206
4560	4822 051 10008	0R Jumper 1206
4561	4822 051 20008	0R Jumper 0805
4562	4822 051 10008	0R Jumper 1206
4569	4822 051 10008	0R Jumper 1206
4572	4822 051 10008	0R Jumper 1206
4580	4822 051 10008	0R Jumper 1206
4593	4822 051 20008	0R Jumper 0805
4601	4822 051 10008	0R Jumper 1206
4603	4822 051 10008	0R Jumper 1206
4604	4822 051 10008	0R Jumper 1206
4606	4822 051 20008	0R Jumper 0805
4607	4822 051 20008	0R Jumper 0805
4608	4822 051 20008	0R Jumper 0805
4609	4822 051 20008	0R Jumper 0805
4610	4822 051 20008	0R Jumper 0805
4611	4822 051 10008	0R Jumper 1206
4612	4822 051 10008	0R Jumper 1206
4613	4822 051 20008	0R Jumper 0805
4614	4822 051 20008	0R Jumper 0805
4615	4822 051 10008	0R Jumper 1206
4616	4822 051 10008	0R Jumper 1206
4617	4822 051 10008	0R Jumper 1206
4622	4822 051 10008	0R Jumper 1206
4624	4822 051 20008	0R Jumper 0805
4625	4822 051 10008	0R Jumper 1206
4626	4822 051 10008	0R Jumper 1206
4627	4822 051 20008	0R Jumper 0805
4628	4822 051 10008	0R Jumper 1206
4629	4822 051 20008	0R Jumper 0805
4630	4822 051 20008	0R Jumper 0805
4631	4822 051 20008	0R Jumper 0805
4632	4822 051 20008	0R Jumper 0805
4640	4822 051 20008	0R Jumper 0805
4641	4822 051 10008	0R Jumper 1206
4642	4822 051 20008	0R Jumper 0805
4643	4822 051 10008	0R Jumper 1206
4644	4822 051 20008	0R Jumper 0805
4645	4822 051 20008	0R Jumper 0805
4653	4822 051 20008	0R Jumper 0805
4657	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5501	4822 157 11477	Coil 2,2µH 5%
5502	4822 157 11477	Coil 2,2µH 5%
5503	4822 157 11477	Coil 2,2µH 5%
5504	4822 157 11477	Coil 2,2µH 5%

DIODES

6501	4822 130 30862	BZX79-B9V1
6503	4822 130 30862	BZX79-B9V1
6504	4822 130 30621	1N4148
6510	4822 130 31878	1N4003G
6511	4822 130 31878	1N4003G

TRANSISTORS & INTEGRATED CIRCUITS

7501	4822 209 31378	NJM4556MB
7503	4822 130 42804	BC817-25
7504	4822 130 42804	BC817-25
7505	5322 130 42755	BC847C
7507	4822 209 83357	NJM4560M
7512	5322 130 42755	BC847C
7513	5322 130 42755	BC847C
7514	5322 130 60508	BC857B

ELECTRICAL PARTS LIST - AF5 BOARD

TRANSISTORS AND INTEGRATED CIRCUITS

7515	4822 130 41246	BC327-25
7516	5322 130 42755	BC847C
7517	5322 130 42755	BC847C
7518	5322 130 42755	BC847C
7519	5322 130 42755	BC847C
7520	5322 130 42755	BC847C
7553	4822 209 33652	TEA6321T/V1

Note : Only the parts mentioned in this list are normal service spare parts.

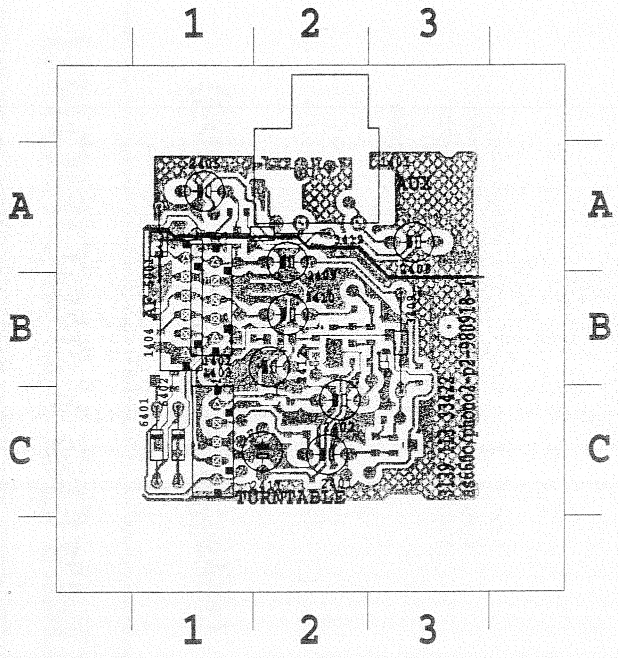
PHONO/AUX BOARD

(For Built-in Record Player)

TABLE OF CONTENTS

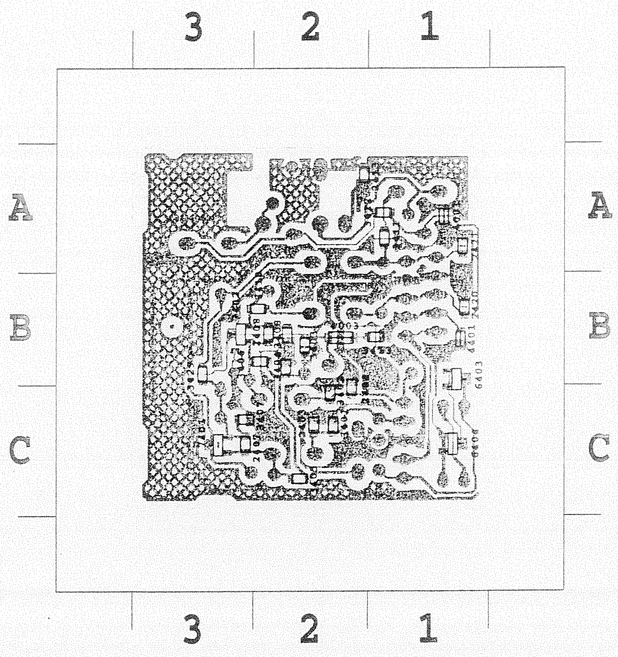
Circuit diagram 14B-2
Layout diagrams 14B-3
Electrical parts list 14B-4

COMPONENT SIDE LAYOUT



1401	A	2
1402	B	1
1403	C	1
1404	B	1
2401	C	2
2402	C	2
2403	C	2
2404	C	2
2405	A	1
2406	A	3
2407	C	3
2408	B	2
2409	A	2
2410	B	2
2411	C	2
2412	B	2
2413	A	2
2420	B	1
2421	A	1
3401	C	2
3402	C	2
3403	B	2
3404	B	2
3405	C	2
3406	B	2
3407	C	3
3408	B	2
3409	B	3
3410	B	2
3411	A	1
3412	A	2
3413	B	1
3422	A	1
3429	B	3
4001	A	1
4003	B	2
4401	B	1
5001	A	1
6401	C	1
6402	C	1
6403	B	1
6404	C	1
7401	C	3
7402	B	3

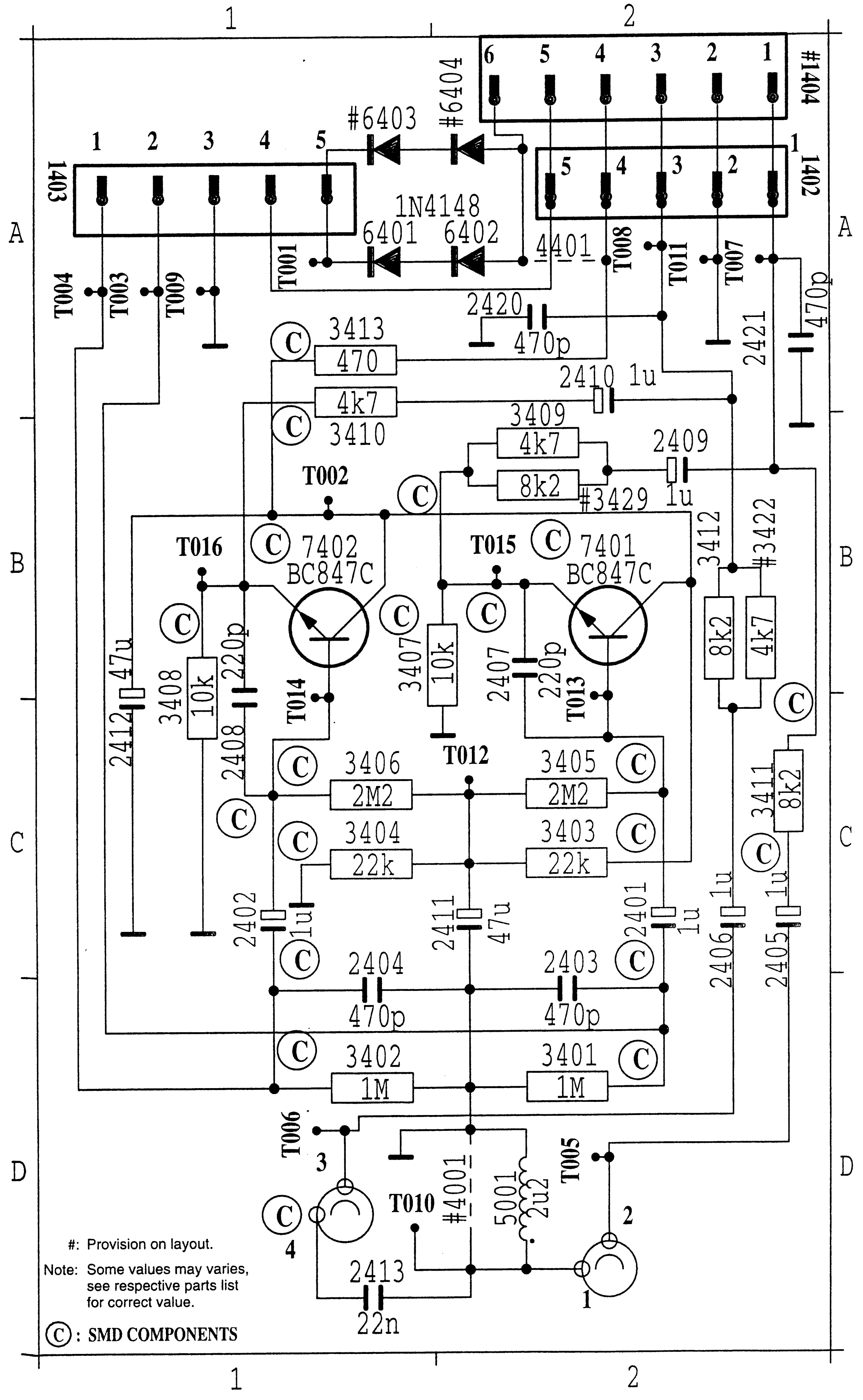
COPPER SIDE LAYOUT



2403	C	2
2404	C	2
2407	C	3
2408	B	2
2413	A	2
2420	B	1
2421	A	1
3401	C	2
3402	C	2
3403	B	2
3404	B	2
3405	C	2
3406	B	2
3407	C	3
3408	B	2
3410	B	2
3411	A	1
3413	B	1
3422	A	1
3429	B	3
4001	A	1
4003	B	2
4401	B	1
6403	B	1
6404	C	1
7401	C	3
7402	B	3

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram and respective parts list.

CIRCUIT DIAGRAM


1
2
A
B
C
D
#1404
6 5 4 3 2 1
1403
1 2 3 4 5
1402
5 4 3 2 1
#6403
#6404
1N4148
6401
6402
4401
T001
T004
T003
T009
T008
T011
T007
2420
470p
2421
470p
3413
470
3410
4k7
2410 1u
3409
4k7
8k2
#3429
2409
1u
T002
T016
7402
BC847C
T015
7401
BC847C
3412
#3422
8k2
4k7
2412
47u
3408
10k
220p
2408
T014
3407
10k
2407
220p
T013
3406
2M2
T012
3405
2M2
3404
22k
3403
22k
3411
8k2
2402
1u
2411
47u
2401
1u
2406
1u
2405
1u
2404
470p
2403
470p
3402
1M
3401
1M
T006
3
4
T010
#4001
5001
2u2
T005
2
1
2413
22n
C

#: Provision on layout.

Note: Some values may varies, see respective parts list for correct value.

Ⓒ : SMD COMPONENTS

1402	A	2
1403	A	1
1404	A	2
2401	C	2
2402	C	1
2403	C	2
2404	C	1
2405	C	2
2406	C	2
2407	B	2
2408	C	1
2409	B	2
2410	A	2
2411	C	2
2412	C	1
2413	D	1
2420	A	2
2421	A	2
3401	D	2
3402	D	1
3403	C	2
3404	C	1
3405	C	2
3406	C	1
3407	B	1
3408	B	1
3409	B	2
3410	B	1
3411	C	2
3412	B	2
3413	A	1
3422	B	2
3429	B	2
4001	D	2
4401	A	2
5001	D	2
6401	A	1
6402	A	2
6403	A	1
6404	A	2
7401	B	2
7402	B	1

ELECTRICAL PARTS LIST - PHONO/AUX BOARD

MISCELLANEOUS

1401	4822 265 20553	Cinch Socket - Aux in

CAPACITORS

2401	4822 124 40242	1µF 20% 63V
2402	4822 124 40242	1µF 20% 63V
2403	5322 122 32268	470pF 10% 50V
2404	5322 122 32268	470pF 10% 50V
2405	4822 124 40242	1µF 20% 63V
2406	4822 124 40242	1µF 20% 63V
2407	4822 122 33575	220pF 5% 50V
2408	4822 122 33575	220pF 5% 50V
2409	4822 124 40242	1µF 20% 63V
2410	4822 124 40242	1µF 20% 63V
2411	4822 124 40433	47µF 20% 25V
2412	4822 124 40433	47µF 20% 25V
2413	5322 122 32654	22nF 10% 63V
2420	5322 122 32268	470pF 10% 50V
2421	5322 122 32268	470pF 10% 50V

RESISTORS

3401	4822 051 20105	1M 5% 0,1W
3402	4822 051 20105	1M 5% 0,1W
3403	4822 051 20223	22k 5% 0,1W
3404	4822 051 20223	22k 5% 0,1W
3405	4822 051 20225	2M2 5% 0,1W
3406	4822 051 20225	2M2 5% 0,1W
3407	4822 117 10833	10k 1% 0,1W
3408	4822 117 10833	10k 1% 0,1W
3409	4822 116 52283	4k7 5% 0,5W
3410	4822 051 20472	4k7 5% 0,1W
3411	4822 051 20822	8k2 5% 0,1W
3412	4822 116 52303	8k2 5% 0,5W
3413	4822 051 20471	470R 5% 0,1W
4002	4822 051 20008	0R Jumper 0805
4003	4822 051 10008	0R Jumper 1206
4401	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5001	4822 157 11235	Coil 22µH 5%

DIODES

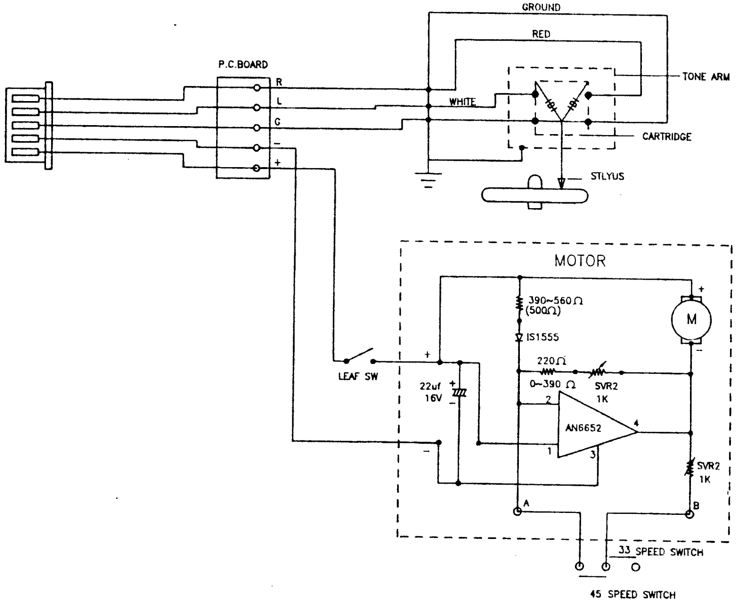
6401	4822 130 30621	1N4148
6402	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

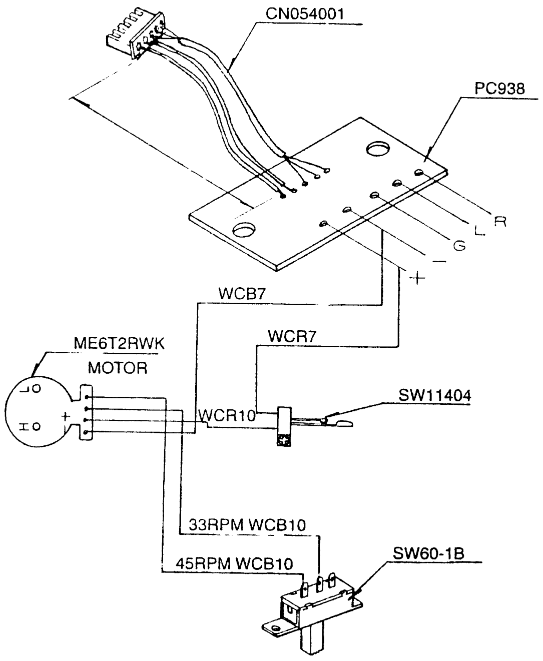
7401	5322 130 42755	BC847C
7402	5322 130 42755	BC847C

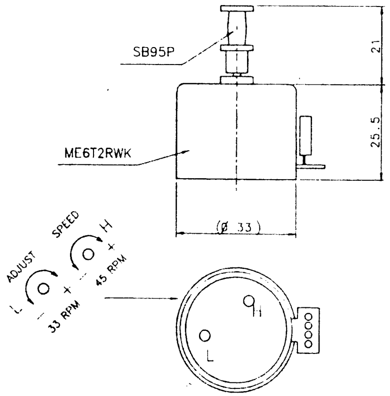
Note : Only the parts mentioned in this list are normal service spare parts.

RECORD PLAYER
DL-40

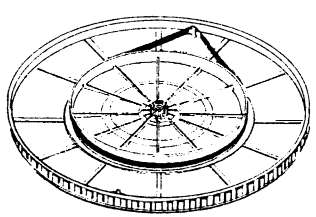

GROUND
RED
P.C.BOARD
R
L
G
−
+
WHITE
TONE ARM
CARTRIDGE
STLYUS
MOTOR
390~560Ω
(500Ω)
IS1555
220Ω
0~390 Ω
SVR2
1K
M
+
−
LEAF SW
22uf
16V
AN6652
1
2
3
4
SVR2
1K
A
B
33 SPEED SWITCH
45 SPEED SWITCH

Connection of printed circuit board & motor

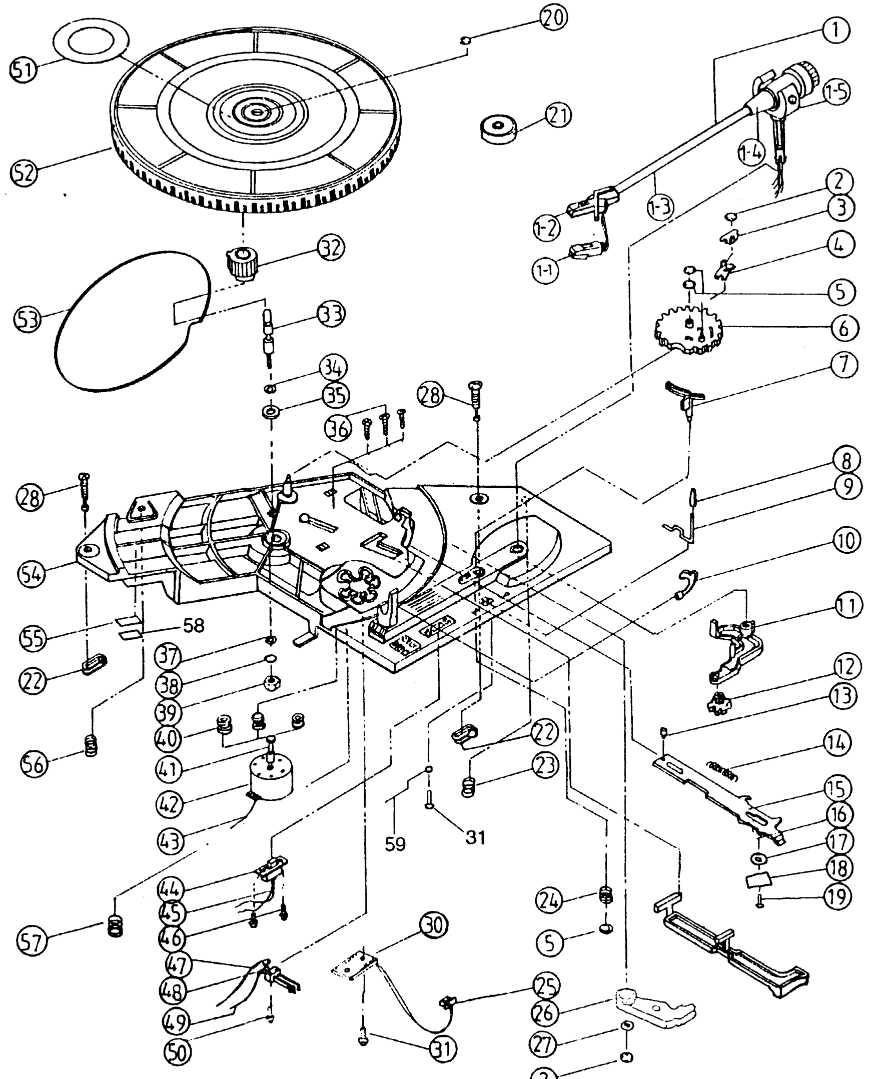

CN054001
PC938
R
L
G
−
+
WCB7
WCR7
ME6T2RWK
MOTOR
L
H
+
WCR10
SW11404
33RPM WCB10
45RPM WCB10
SW60-1B


SB95P
ME6T2RWK
21
25.5
(Ø 33)
ADJUST
SPEED
L
H
−
+
33 RPM
45 RPM
H
L

PLACEMENT OF BELT



EXPLODED VIEW OF RECORD PLAYER



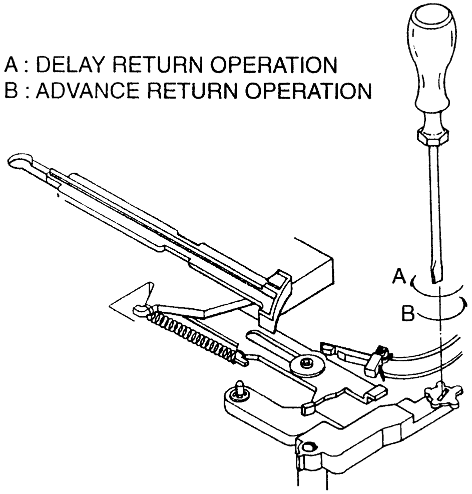
20
1
51
1-5
21
1-4
52
2
3
1-3
1-2
4
1-1
32
5
6
53
33
7
34
35
28
36
8
28
9
54
10
11
55
58
22
37
38
12
13
39
14
40
56
22
41
23
42
15
16
43
59
31
17
18
44
24
19
57
45
46
30
5
47
48
25
26
49
31
27
50
2

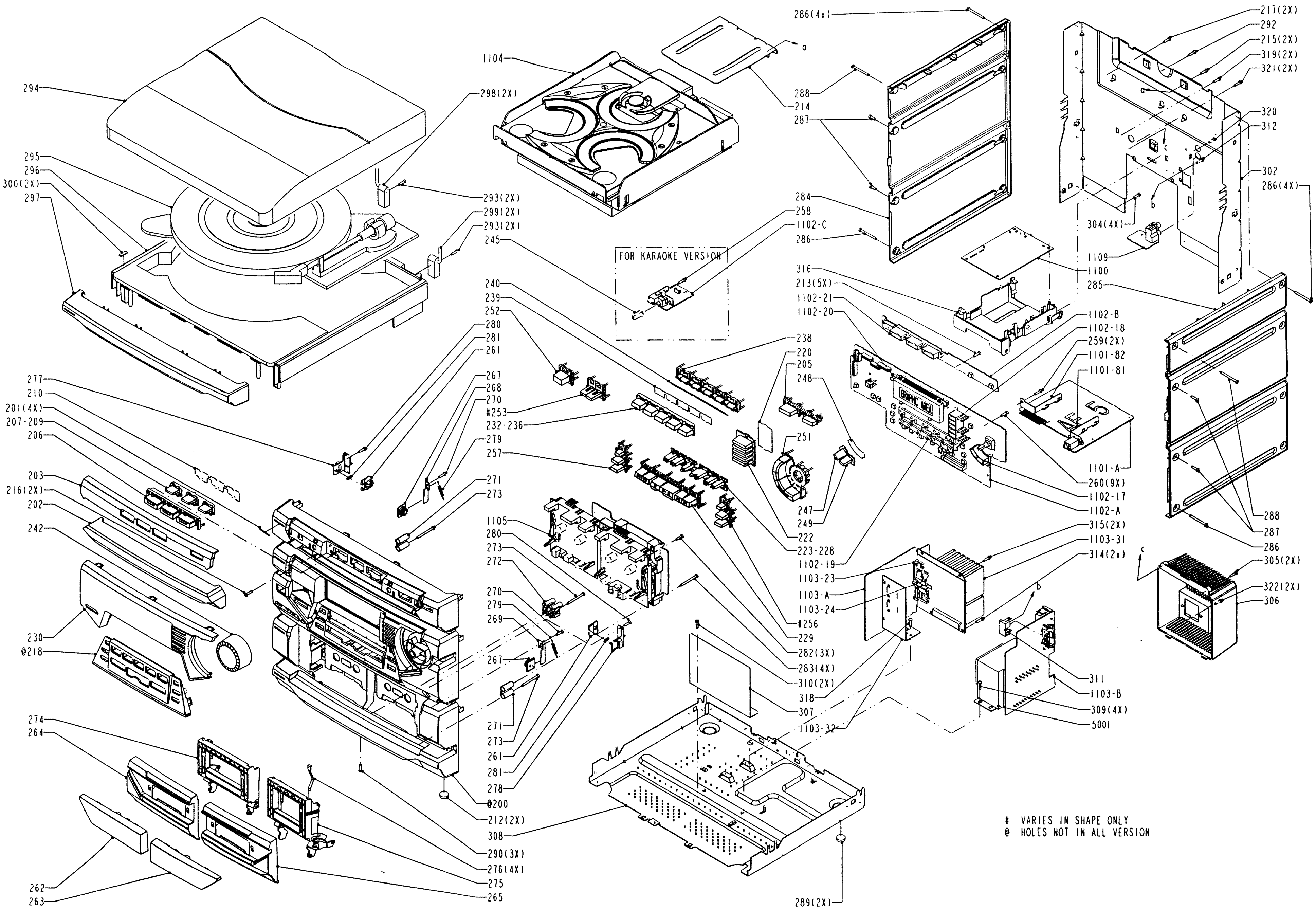
Record Player DL-40 Mechanical parts list

1	4822 251 70328	Tone Arm
1-1	4822 251 30153	Cartridge
2	4822 530 80538	3mm CS Ring
5	4822 530 80539	4mm CS Ring
6	4822 522 33247	Big Gear
7	4822 402 61417	Tone Arm Elevator
8	4822 462 41916	Plastic Cap
9	4822 402 61413	Lever, Cueing
10	4822 402 61416	Arm Clip
11	4822 402 61414	Link, Return
12	4822 402 61415	Bracket, Adjustment
14	4822 492 71081	Spring
21	4822 263 21184	45 RPM Adaptor
22	4822 492 71082	Clip
23	4822 492 71079	Spring
24	4822 492 71077	Spring
26	4822 466 93093	Shut Off Plate, Sw
27	4822 532 52438	Plastic Washer
28	4822 502 13959	Screw
32	4822 522 33225	Small Gear
34	4822 532 12731	Plastic Washer
35	4822 532 52434	Washer
37	4822 532 52449	Washer
40	4822 529 10373	Motor Rubber
41	4822 528 50332	Motor Pulley
42	4822 361 21305	Motor
44	4822 277 11655	Slide Switch
48	4822 276 13251	Leaf Switch
51	4822 460 20803	Pvc Sheet
52	4822 528 10843	Turntable Platter
53	4822 358 31178	Belt
56	4822 492 71078	Spring
57	4822 492 11448	Spring
59	4822 492 11449	Spring

Note: Only the parts mentioned are normal service spare parts

A : DELAY RETURN OPERATION
B : ADVANCE RETURN OPERATION




294
295
296
300(2X)
297
298(2X)
293(2X)
299(2X)
293(2X)
245
1104
214
a
FOR KARAOKE VERSION
258
1102-C
286(4x)
288
287
284
286
217(2X)
292
215(2X)
319(2X)
321(2X)
320
312
302
286(4X)
304(4X)
1109
1100
285
316
213(5X)
1102-21
1102-20
1102-B
1102-18
259(2X)
1101-82
1101-81
1101-A
260(9X)
1102-17
1102-A
288
287
286
240
239
252
280
281
261
267
268
270
#253
232-236
279
257
271
273
238
220
205
248
251
247
249
222
223-228
1102-19
277
210
201(4X)
207-209
206
203
216(2X)
202
242
230
@218
1105
280
273
272
270
279
269
267
271
273
261
281
278
@200
212(2X)
#256
229
282(3X)
283(4X)
310(2X)
318
307
1103-32
308
289(2X)
315(2X)
1103-31
314(2X)
1103-23
1103-A
1103-24
c
b
305(2X)
322(2X)
306
311
1103-B
309(4X)
5001
274
264
262
263
290(3X)
276(4X)
275
265

VARIES IN SHAPE ONLY
@ HOLES NOT IN ALL VERSION

MECHANICAL & ACCESSORIES PARTS LIST - MAIN UNIT

200	4822 459 05161		Cabinet Front /21/30
200	4822 459 05183		Cabinet Front /22/34
201	4822 459 11086		Badge (Philips)
202	4822 442 01536		Cover Tray CDC
203	4822 450 10572		Window CDC Front
205	4822 410 12048		Button O/C Disc Changer
206	4822 410 12049		Button Set CDC Select
212	4822 462 40683		Plate (Foot)
218	4822 442 01595		Cover Ornamental
229	4822 410 12051		Button Set Control
230	4822 450 10584		Window Display /21/30
230	4822 450 10591		Window Display /22/34
232	4822 410 12077		Button Set - Source
238	4822 464 10473		Frame Button Source
242	4822 410 12057		Knob Volume
245	4822 410 11595		Knob Karaoke
251	4822 410 12059		Button Set IS/DSC/DBB
252	4822 410 12061		Button Set Power
253	4822 410 12062		Button Clock Timer /21/30
253	4822 410 12143		Button Set RDS/CLK /22/34
256	4822 410 12063		Button Rev/Dubbing
257	4822 410 12108		Button Set Pgm/Rec
261	4822 402 10621		Push-Catch
262	4822 450 10576		Lens Cassette Left
263	4822 450 10575		Lens Cassette Right
264	4822 442 01538		Cover Cassette Left
265	4822 442 01596		Cover Cassette Right
267	4822 529 10322		Damper Assembly
274	4822 443 10487		Door Cassette Left
275	4822 443 10488		Door Cassette Right
276	4822 492 42787		Spring Cassette
277	4822 402 11245		Bracket Left
278	4822 402 11246		Bracket Right
279	4822 492 11344		Spring Compression
281	4822 492 11345		Spring Tension
289	4822 462 40683		Plate (Foot)
294	4822 462 71935		Dustcover
297	4822 442 01541		Cover Front Turntable
298	4822 401 11778		Clamping Block
299	4822 535 10578		Pin Zn Standard
300	4822 462 41656		Rubber Pad
311	4822 402 10288		Bracket Mains Socket
350	4822 445 10795		LS Pair To Single
351	4822 303 50063		FM Aerial
356	4822 219 10453		Remote Control
384	4822 303 50082		AM Frame Aerial
385	4822 321 10249	⚠	Mains Cord
385	4822 321 10954	⚠	Mains Cord /30
391	4822 736 16547		Instruction For Use /21/30
391	4822 736 16587		Instruction For Use /22
391	4822 736 16586		Instruction For Use /34
5001	4822 146 11082	⚠	Mains Transformer /21
5001	4822 146 11094	⚠	Mains Transformer

Note : Only the parts mentioned in this list are normal Service spare parts.

SCREW LISTS - MAIN UNIT

213	D3 x 10
215	M3 x 6
216	D3 x 12
217	D3 x 10
258	D3 x 12
259	D3 x 12
260	D3 x 10
270	D3 x 12
273	D3 x 30
280	D3 x 12
282	D3 x 12
283	D3 x 30
286	M3 x 15
287	D3 x 12
288	D3 x 20
290	M3 x 10
292	M3 x 10
293	D3 x 12
304	M3 x 6
305	M3 x 6
309	M3 x 6
310	M3 x 6
312	D3 x 12
314	M3 x 6
315	M3 x 10
318	M3 x 6
319	D3 x 12
320	D3 x 12
321	D3 x 12
322	D3 x 10